SEQUENCE LISTING

<110>   Altmann, Scott W

Wang, Luquan

Graziano, Michael

Murgolo, Nick

<120>   NPC1L1 (NPC3) AND METHODS OF USE THEREOF

<130>   JB01603K2 US

<140>   10/663,208

<141>   2003-09-16

<150>   60/397,442

<151>   2002-07-19

<150>   10/621,758

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<151>   2003-08-22

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Met	Ala	Ala	Ala	Trp	Leu	Gly	Trp	Leu	Leu	Trp	Ala	Leu	Leu	Leu	Ser	
1				5					10					15		

gcg	gcc	cag	ggt	gag	cta	tac	aca	ccc	aaa	cac	gaa	gct	ggg	gtc	tgc	96
Ala	Ala	Gln	Gly	Glu	Leu	Tyr	Thr	Pro	Lys	His	Glu	Ala	Gly	Val	Cys	
			20					25					30			

acc	ttt	tac	gaa	gag	tgc	ggg	aaa	aac	cca	gag	ctc	tct	gga	ggc	ctc	144
Thr	Phe	Tyr	Glu	Glu	Cys	Gly	Lys	Asn	Pro	Glu	Leu	Ser	Gly	Gly	Leu	
		35					40					45				

acg	tca	cta	tcc	aat	gta	tcc	tgc	ctg	tct	aac	acc	ccg	gcc	cgc	cac	192
Thr	Ser	Leu	Ser	Asn	Val	Ser	Cys	Leu	Ser	Asn	Thr	Pro	Ala	Arg	His	
	50					55					60					

gtc	acg	ggt	gaa	cac	ctg	gct	ctt	ctc	cag	cgc	atc	tgt	ccc	cgc	ctg	240
Val	Thr	Gly	Glu	His	Leu	Ala	Leu	Leu	Gln	Arg	Ile	Cys	Pro	Arg	Leu	
65					70					75					80	

tac	aac	ggc	ccc	aat	acc	act	ttt	gcc	tgt	tgc	tct	acc	aag	cag	ctg	288
Tyr	Asn	Gly	Pro	Asn	Thr	Thr	Phe	Ala	Cys	Cys	Ser	Thr	Lys	Gln	Leu	
			85					90					95			

ctg	tcc	tta	gaa	agc	agc	atg	tcc	atc	acc	aag	gcc	ctt	ctc	acg	cgc	336
Leu	Ser	Leu	Glu	Ser	Ser	Met	Ser	Ile	Thr	Lys	Ala	Leu	Leu	Thr	Arg	
			100					105					110			

tgc	ccg	gcc	tgc	tct	gac	aat	ttt	gtg	agc	tta	cac	tgc	cac	aac	act	384
Cys	Pro	Ala	Cys	Ser	Asp	Asn	Phe	Val	Ser	Leu	His	Cys	His	Asn	Thr	
		115					120					125				

tgc	agc	cct	gac	cag	agc	ctc	ttc	atc	aac	gtc	acc	cgg	gtg	gtt	gag	432
Cys	Ser	Pro	Asp	Gln	Ser	Leu	Phe	Ile	Asn	Val	Thr	Arg	Val	Val	Glu	
	130					135					140					

cgg	ggc	gct	gga	gag	cct	cct	gcc	gtg	gtg	gcc	tat	gag	gcc	ttt	tat	480
Arg	Gly	Ala	Gly	Glu	Pro	Pro	Ala	Val	Val	Ala	Tyr	Glu	Ala	Phe	Tyr	
145					150					155					160	

cag	cgc	agc	ttt	gct	gag	aag	gcc	tat	gag	tcc	tgc	agc	cag	gtg	cgc	528
Gln	Arg	Ser	Phe	Ala	Glu	Lys	Ala	Tyr	Glu	Ser	Cys	Ser	Gln	Val	Arg	
			165					170					175			

atc	cct	gcg	gcc	gct	tcc	ttg	gcc	gtg	ggc	agc	atg	tgt	gga	gtg	tat	576
Ile	Pro	Ala	Ala	Ala	Ser	Leu	Ala	Val	Gly	Ser	Met	Cys	Gly	Val	Tyr	
			180					185					190			

ggc	tcc	gcc	ctc	tgc	aat	gct	cag	cgc	tgg	ctc	aac	ttc	caa	gga	gac	624
Gly	Ser	Ala	Leu	Cys	Asn	Ala	Gln	Arg	Trp	Leu	Asn	Phe	Gln	Gly	Asp	
		195					200					205				

| aca | ggg | aat | ggc | ctg | gct | ccg | ctg | gat | atc | acc | ttc | cac | ctc | ttg | gag | 672 |
| Thr | Gly | Asn | Gly | Leu | Ala | Pro | Leu | Asp | Ile | Thr | Phe | His | Leu | Leu | Glu | |

2

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cct ggc cag gcc cta ccg gat ggg atc cag cca ctg aat ggg aag atc        720
Pro Gly Gln Ala Leu Pro Asp Gly Ile Gln Pro Leu Asn Gly Lys Ile
225                 230                 235                 240

gca ccc tgc aac gag tct cag ggt gat gac tca gca gtc tgc tcc tgc        768
Ala Pro Cys Asn Glu Ser Gln Gly Asp Asp Ser Ala Val Cys Ser Cys
                245                 250                 255

cag gac tgt gcg gcg tcc tgc cct gtc atc cct ccg ccc gag gcc ttg        816
Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Glu Ala Leu
                260                 265                 270

cgc cct tcc ttc tac atg ggt cgc atg cca ggc tgg ctg gcc ctc atc        864
Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile
                275                 280                 285

atc atc ttc act gct gtc ttt gtg ttg ctc tct gca gtc ctt gtg cgt        912
Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Ala Val Leu Val Arg
                290                 295                 300

ctc cga gtg gtt tcc aac agg aac aag aac aag gca gaa ggc ccc cag        960
Leu Arg Val Val Ser Asn Arg Asn Lys Asn Lys Ala Glu Gly Pro Gln
305                 310                 315                 320

gaa gcc ccc aaa ctc cct cat aag cac aaa ctc tca ccc cat acc atc       1008
Glu Ala Pro Lys Leu Pro His Lys His Lys Leu Ser Pro His Thr Ile
                325                 330                 335

ctg ggc cgg ttc ttc cag aac tgg ggc aca agg gtg gcc tcg tgg cca       1056
Leu Gly Arg Phe Phe Gln Asn Trp Gly Thr Arg Val Ala Ser Trp Pro
                340                 345                 350

ctc acc gtc tta gca ctg tcc ttc atc gtt gtg ata gcc tta gca gca       1104
Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ala Ala
                355                 360                 365

ggc ctg acc ttt att gaa ctc acc aca gac cct gtg gaa ctg tgg tcg       1152
Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
370                 375                 380

gcc ccc aag agc cag gcc cgg aaa gag aag tct ttc cat gat gag cat       1200
Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ser Phe His Asp Glu His
385                 390                 395                 400

ttc ggc ccc ttc ttt cga acc aac cag att ttc gtg aca gct cgg aac       1248
Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Arg Asn
                405                 410                 415

agg tcc agc tac aag tac gac tcc cta ctg cta ggg tcc aag aac ttc       1296
Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Ser Lys Asn Phe
                420                 425                 430

agt ggg atc ctg tcc ctg gac ttc ctg ctg gag ctg ctg gag ctt cag       1344
Ser Gly Ile Leu Ser Leu Asp Phe Leu Leu Glu Leu Leu Glu Leu Gln
                435                 440                 445

gag agg ctt cga cac ctg caa gtg tgg tcc cct gag gca gag cgc aac       1392
Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Glu Arg Asn
450                 455                 460
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atc tcc ctc cag gac atc tgc tat gcc ccc ctc aac cca tat aac acc        1440
Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Tyr Asn Thr
465                     470                 475                 480

agc ctc tcc gac tgc tgt gtc aac agc ctc ctt cag tac ttc cag aac        1488
Ser Leu Ser Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn
                485                 490                 495

aac cgc acc ctc ctg atg ctc acg gcc aac cag act ctg aat ggc cag        1536
Asn Arg Thr Leu Leu Met Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln
            500                 505                 510

acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gca aat gcc        1584
Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
            515                 520                 525

cct ctc acg ttc aaa gat ggc acg tct ctg gcc ctg agc tgc atg gct        1632
Pro Leu Thr Phe Lys Asp Gly Thr Ser Leu Ala Leu Ser Cys Met Ala
            530                 535                 540

gac tac ggg gct cct gtc ttc ccc ttc ctt gct gtt ggg gga tac caa        1680
Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln
545                 550                 555                 560

ggc acg gac tat tcc gag gca gaa gcg ctg atc ata acc ttc tct ctc        1728
Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Leu
                565                 570                 575

aat aac tac ccc gct gat gat ccc cgc atg gcc cag gcc aag ctc tgg        1776
Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala Gln Ala Lys Leu Trp
                580                 585                 590

gag gag gct ttc ttg aag gaa atg gaa tcc ttc cag agg aac aca agt        1824
Glu Glu Ala Phe Leu Lys Glu Met Glu Ser Phe Gln Arg Asn Thr Ser
            595                 600                 605

gac aag ttc cag gtt gcg ttc tca gct gag cgc tct ctg gag gat gag        1872
Asp Lys Phe Gln Val Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu
            610                 615                 620

atc aac cgc acc acc atc cag gac ctg cct gtc ttt gcc gtc agc tac        1920
Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Val Ser Tyr
625                 630                 635                 640

att atc gtc ttc ctg tac atc tcc ctg gcc ctg ggc agc tac tcc aga        1968
Ile Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg
                645                 650                 655

tgc agc cga gta gcg gtg gag tcc aag gct act ctg ggc cta ggt ggg        2016
Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly
                660                 665                 670

gtg att gtt gtg ctg gga gca gtt ctg gct gcc atg ggc ttc tac tcc        2064
Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser
            675                 680                 685

tac ctg ggt gtc ccc tct tct ctg gtt atc atc caa gtg gta cct ttc        2112
Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe
    690                 695                 700
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ctg gtg cta gct gtg gga gct gac aac atc ttc atc ttt gtt ctt gag        2160
Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
705             710             715                 720

tac cag agg cta cct agg atg cct ggg gaa cag cga gag gct cac att        2208
Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile
                725             730             735

ggc cgc acc ctg ggc agt gtg gcc ccc agc atg ctg ctg tgc agc ctc        2256
Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu
            740             745             750

tct gag gcc atc tgc ttc ttt cta ggg gcc ctg acc ccc atg cca gct        2304
Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
            755             760             765

gtg agg acc ttc gcc ttg acc tct ggc tta gca att atc ctc gac ttc        2352
Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Leu Asp Phe
        770             775             780

ctg ctc cag atg act gcc ttt gtg gcc ctg ctc tcc ctg gat agc aag        2400
Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785             790             795             800

agg cag gag gcc tct cgc ccg gat gtc tta tgc tgc ttt tca acc cgg        2448
Arg Gln Glu Ala Ser Arg Pro Asp Val Leu Cys Cys Phe Ser Thr Arg
                805             810             815

aag ctg ccc cca cct aaa gaa aaa gaa ggc ctc tta ctc cgc ttc ttc        2496
Lys Leu Pro Pro Pro Lys Glu Lys Glu Gly Leu Leu Leu Arg Phe Phe
            820             825             830

cgc aag ata tac gct cct ttc ctg ctg cac aga ttc atc cgc cct gtt        2544
Arg Lys Ile Tyr Ala Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val
        835             840             845

gtg atg ctg ctg ttt ctg acc ctg ttt gga gca aat ctc tac tta atg        2592
Val Met Leu Leu Phe Leu Thr Leu Phe Gly Ala Asn Leu Tyr Leu Met
        850             855             860

tgc aac atc aac gtg ggg cta gac cag gag ctg gct ctg ccc aag gac        2640
Cys Asn Ile Asn Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
865             870             875             880

tcg tac ttg ata gac tac ttc ctc ttt ctg aac cga tac ctt gaa gtg        2688
Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val
                885             890             895

ggg cct cca gtg tac ttt gtc acc acc tcg ggc ttc aac ttc tcc agc        2736
Gly Pro Pro Val Tyr Phe Val Thr Thr Ser Gly Phe Asn Phe Ser Ser
                900             905             910

gag gca ggc atg aac gcc act tgc tct agc gca ggc tgt aag agc ttc        2784
Glu Ala Gly Met Asn Ala Thr Cys Ser Ser Ala Gly Cys Lys Ser Phe
            915             920             925

tcc cta acc cag aaa atc cag tat gcc agt gaa ttc cct gac cag tct        2832
Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asp Gln Ser
        930             935             940

tac gtg gct att gct gca tcc tcc tgg gta gat gac ttc atc gac tgg        2880
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Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
945             950             955                 960

ctg acc ccg tcc tcc tcc tgc tgt cgc ctt tat ata cgt ggc ccc cat     2928
Leu Thr Pro Ser Ser Ser Cys Cys Arg Leu Tyr Ile Arg Gly Pro His
            965             970                 975

aag gat gag ttc tgt ccc tca acg gat act tcc ttc aac tgc tta aaa     2976
Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys
            980             985                 990

aac tgc atg aac cgc act ctg ggt cct gtg agg ccc aca gcg gaa cag     3024
Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Ala Glu Gln
            995             1000                1005

ttt cat aag tac ctg ccc tgg ttc ctg aat gat ccg ccc aat atc         3069
Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Pro Pro Asn Ile
        1010            1015            1020

aga tgt ccc aaa ggg ggt cta gca gcg tat aga acg tct gtg aat         3114
Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn
        1025            1030            1035

ttg agc tca gat ggc cag gtt ata gcc tcc cag ttc atg gcc tac         3159
Leu Ser Ser Asp Gly Gln Val Ile Ala Ser Gln Phe Met Ala Tyr
        1040            1045            1050

cac aag ccc tta agg aac tca cag gac ttc aca gaa gct ctc cgg         3204
His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg
        1055            1060            1065

gcg tcc cgg ttg cta gca gcc aac atc aca gct gac cta cgg aag         3249
Ala Ser Arg Leu Leu Ala Ala Asn Ile Thr Ala Asp Leu Arg Lys
        1070            1075            1080

gtg cct ggg aca gat cca aac ttt gag gtc ttc cct tac acg atc         3294
Val Pro Gly Thr Asp Pro Asn Phe Glu Val Phe Pro Tyr Thr Ile
        1085            1090            1095

tcc aac gtg ttc tac cag caa tac ctg acg gtc ctt cct gag gga         3339
Ser Asn Val Phe Tyr Gln Gln Tyr Leu Thr Val Leu Pro Glu Gly
        1100            1105            1110

atc ttc acc ctt gct ctt tgc ttt gtg ccc acc ttt gtt gtc tgc         3384
Ile Phe Thr Leu Ala Leu Cys Phe Val Pro Thr Phe Val Val Cys
        1115            1120            1125

tac ctc cta ctg ggc ctg gac atg tgc tca ggg atc ctc aac cta         3429
Tyr Leu Leu Leu Gly Leu Asp Met Cys Ser Gly Ile Leu Asn Leu
        1130            1135            1140

ctc tcc atc att atg att ctc gtg gac acc att ggc ctc atg gct         3474
Leu Ser Ile Ile Met Ile Leu Val Asp Thr Ile Gly Leu Met Ala
        1145            1150            1155

gtg tgg ggt atc agc tat aat gcg gta tcc ctc atc aac ctt gtc         3519
Val Trp Gly Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val
        1160            1165            1170

acg gca gtg ggc atg tct gtg gag ttt gtg tcc cac atc act cgg         3564
Thr Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg
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tcc ttt gct gta agc acc aag  cct acc cgg ctg gag  agg gct aaa       3609
Ser Phe Ala Val Ser Thr Lys  Pro Thr Arg Leu Glu  Arg Ala Lys
    1190                1195                1200

gat gct act gtc ttc atg ggc  agt gcg gtg ttt gct  gga gtg gcc       3654
Asp Ala Thr Val Phe Met Gly  Ser Ala Val Phe Ala  Gly Val Ala
    1205                1210                1215

atg acc aac ttc cca ggc atc  ctc atc ttg ggc ttt  gcc caa gcc       3699
Met Thr Asn Phe Pro Gly Ile  Leu Ile Leu Gly Phe  Ala Gln Ala
    1220                1225                1230

cag ctt att cag atc ttc ttc  ttc cgc ctc aac ctt  ctg atc acc       3744
Gln Leu Ile Gln Ile Phe Phe  Phe Arg Leu Asn Leu  Leu Ile Thr
    1235                1240                1245

ttg ctg ggt ctg ctg cat ggc  ctg gtc ttc ctg ccg  gtt gtc ctc       3789
Leu Leu Gly Leu Leu His Gly  Leu Val Phe Leu Pro  Val Val Leu
    1250                1255                1260

agc tat ctg gga cca gat gtt  aac caa gct ctg gta  cag gag gag       3834
Ser Tyr Leu Gly Pro Asp Val  Asn Gln Ala Leu Val  Gln Glu Glu
    1265                1270                1275

aaa cta gcc agc gag gca gca  gtg gcc cca gag cct  tct tgc cca       3879
Lys Leu Ala Ser Glu Ala Ala  Val Ala Pro Glu Pro  Ser Cys Pro
    1280                1285                1290

cag tac ccc tcc cct gct gat  gcg gat gcc aat gtt  aac tac ggc       3924
Gln Tyr Pro Ser Pro Ala Asp  Ala Asp Ala Asn Val  Asn Tyr Gly
    1295                1300                1305

ttt gcc cca gaa ctt gcc cac  gga gct aat gct gct  aga agc tct       3969
Phe Ala Pro Glu Leu Ala His  Gly Ala Asn Ala Ala  Arg Ser Ser
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ttg ccc aaa agt gac caa aag  ttc taa                                3996
Leu Pro Lys Ser Asp Gln Lys  Phe
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            20                  25                  30
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7

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Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu
        35              40              45

Thr Ser Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg His
    50              55              60

Val Thr Gly Glu His Leu Ala Leu Leu Gln Arg Ile Cys Pro Arg Leu
65              70              75              80

Tyr Asn Gly Pro Asn Thr Thr Phe Ala Cys Cys Ser Thr Lys Gln Leu
            85              90              95

Leu Ser Leu Glu Ser Ser Met Ser Ile Thr Lys Ala Leu Leu Thr Arg
            100             105             110

Cys Pro Ala Cys Ser Asp Asn Phe Val Ser Leu His Cys His Asn Thr
        115             120             125

Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Glu
    130             135             140

Arg Gly Ala Gly Glu Pro Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
145             150             155             160

Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Gln Val Arg
            165             170             175

Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr
        180             185             190

Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
    195             200             205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
    210             215             220

Pro Gly Gln Ala Leu Pro Asp Gly Ile Gln Pro Leu Asn Gly Lys Ile
225             230             235             240

Ala Pro Cys Asn Glu Ser Gln Gly Asp Asp Ser Ala Val Cys Ser Cys
            245             250             255

Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Glu Ala Leu
            260             265             270
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Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile
        275             280             285

Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Ala Val Leu Val Arg
    290             295             300

Leu Arg Val Val Ser Asn Arg Asn Lys Asn Lys Ala Glu Gly Pro Gln
305             310             315             320

Glu Ala Pro Lys Leu Pro His Lys His Lys Leu Ser Pro His Thr Ile
            325             330             335

Leu Gly Arg Phe Phe Gln Asn Trp Gly Thr Arg Val Ala Ser Trp Pro
            340             345             350

Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ala Ala
        355             360             365

Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
    370             375             380

Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ser Phe His Asp Glu His
385             390             395             400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Arg Asn
            405             410             415

Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Ser Lys Asn Phe
            420             425             430

Ser Gly Ile Leu Ser Leu Asp Phe Leu Leu Glu Leu Leu Glu Leu Gln
        435             440             445

Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Glu Arg Asn
    450             455             460

Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Tyr Asn Thr
465             470             475             480

Ser Leu Ser Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn
            485             490             495

Asn Arg Thr Leu Leu Met Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln
            500             505             510
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9

Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
        515   520   525

Pro Leu Thr Phe Lys Asp Gly Thr Ser Leu Ala Leu Ser Cys Met Ala
        530   535   540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln
545   550   555   560

Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Leu
                565   570   575

Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala Gln Ala Lys Leu Trp
            580   585   590

Glu Glu Ala Phe Leu Lys Glu Met Glu Ser Phe Gln Arg Asn Thr Ser
        595   600   605

Asp Lys Phe Gln Val Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu
        610   615   620

Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Val Ser Tyr
625   630   635   640

Ile Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg
            645   650   655

Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly
            660   665   670

Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser
        675   680   685

Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe
        690   695   700

Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
705   710   715   720

Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile
            725   730   735

Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu
            740   745   750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala

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            755                     760                     765


Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Leu Asp Phe
    770                     775                 780


Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785                     790                 795                 800


Arg Gln Glu Ala Ser Arg Pro Asp Val Leu Cys Cys Phe Ser Thr Arg
                805                 810                 815


Lys Leu Pro Pro Pro Lys Glu Lys Glu Gly Leu Leu Leu Arg Phe Phe
            820                 825                 830


Arg Lys Ile Tyr Ala Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val
        835                 840                 845


Val Met Leu Leu Phe Leu Thr Leu Phe Gly Ala Asn Leu Tyr Leu Met
    850                 855                 860


Cys Asn Ile Asn Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
865                 870                 875                 880


Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val
            885                 890                 895


Gly Pro Pro Val Tyr Phe Val Thr Thr Ser Gly Phe Asn Phe Ser Ser
        900                 905                 910


Glu Ala Gly Met Asn Ala Thr Cys Ser Ser Ala Gly Cys Lys Ser Phe
    915                 920                 925


Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asp Gln Ser
    930                 935                 940


Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
945                 950                 955                 960


Leu Thr Pro Ser Ser Ser Cys Cys Arg Leu Tyr Ile Arg Gly Pro His
            965                 970                 975


Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys
            980                 985                 990


Asn Cys Met Asn Arg Thr Leu Gly  Pro Val Arg Pro Thr  Ala Glu Gln
    995                 1000                1005
```

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Phe His  Lys Tyr Leu Pro Trp  Phe Leu Asn Asp Pro  Pro Asn Ile
    1010                 1015                 1020

Arg Cys  Pro Lys Gly Gly Leu  Ala Ala Tyr Arg Thr  Ser Val Asn
    1025                 1030                 1035

Leu Ser  Ser Asp Gly Gln Val  Ile Ala Ser Gln Phe  Met Ala Tyr
    1040                 1045                 1050

His Lys  Pro Leu Arg Asn Ser  Gln Asp Phe Thr Glu  Ala Leu Arg
    1055                 1060                 1065

Ala Ser  Arg Leu Leu Ala Ala  Asn Ile Thr Ala Asp  Leu Arg Lys
    1070                 1075                 1080

Val Pro  Gly Thr Asp Pro Asn  Phe Glu Val Phe Pro  Tyr Thr Ile
    1085                 1090                 1095

Ser Asn  Val Phe Tyr Gln Gln  Tyr Leu Thr Val Leu  Pro Glu Gly
    1100                 1105                 1110

Ile Phe  Thr Leu Ala Leu Cys  Phe Val Pro Thr Phe  Val Val Cys
    1115                 1120                 1125

Tyr Leu  Leu Leu Gly Leu Asp  Met Cys Ser Gly Ile  Leu Asn Leu
    1130                 1135                 1140

Leu Ser  Ile Ile Met Ile Leu  Val Asp Thr Ile Gly  Leu Met Ala
    1145                 1150                 1155

Val Trp  Gly Ile Ser Tyr Asn  Ala Val Ser Leu Ile  Asn Leu Val
    1160                 1165                 1170

Thr Ala  Val Gly Met Ser Val  Glu Phe Val Ser His  Ile Thr Arg
    1175                 1180                 1185

Ser Phe  Ala Val Ser Thr Lys  Pro Thr Arg Leu Glu  Arg Ala Lys
    1190                 1195                 1200

Asp Ala  Thr Val Phe Met Gly  Ser Ala Val Phe Ala  Gly Val Ala
    1205                 1210                 1215

Met Thr  Asn Phe Pro Gly Ile  Leu Ile Leu Gly Phe  Ala Gln Ala
    1220                 1225                 1230
```

12

```
Gln Leu  Ile Gln Ile Phe Phe  Phe Arg Leu Asn Leu  Leu Ile Thr
    1235              1240              1245


Leu Leu  Gly Leu Leu His Gly  Leu Val Phe Leu Pro  Val Val Leu
    1250              1255              1260


Ser Tyr  Leu Gly Pro Asp Val  Asn Gln Ala Leu Val  Gln Glu Glu
    1265              1270              1275


Lys Leu  Ala Ser Glu Ala Ala  Val Ala Pro Glu Pro  Ser Cys Pro
    1280              1285              1290


Gln Tyr  Pro Ser Pro Ala Asp  Ala Asp Ala Asn Val  Asn Tyr Gly
    1295              1300              1305


Phe Ala  Pro Glu Leu Ala His  Gly Ala Asn Ala Ala  Arg Ser Ser
    1310              1315              1320


Leu Pro  Lys Ser Asp Gln Lys  Phe
    1325              1330


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Met Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu
1               5                   10                  15

cgc ttg gcc cag agt gag cct tac aca acc atc cac cag cct ggc tac      96
Arg Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr
                20                  25                  30

tgc gcc ttc tat gac gaa tgt ggg aag aac cca gag ctg tct gga agc     144
Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser
            35                  40                  45
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ctc atg aca ctc tcc aac gtg tcc tgc ctg tcc aac acg ccg gcc cgc          192
Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg
    50                  55                  60

aag atc aca ggt gat cac ctg atc cta tta cag aag atc tgc ccc cgc          240
Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg
65                  70                  75                  80

ctc tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg          288
Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu
                85                  90                  95

gta tca ctg gaa gcg agt ctg tcg atc acc aag gcc ctc ctc acc cgc          336
Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
            100                 105                 110

tgc cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg          384
Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr
        115                 120                 125

tgc agc ccc aat cag agc ctc ttc atc aat gtg acc cgc gtg gcc cag          432
Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln
    130                 135                 140

cta ggg gct gga caa ctc cca gct gtg gtg gcc tat gag gcc ttc tac          480
Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
145                 150                 155                 160

cag cat agc ttt gcc gag cag agc tat gac tcc tgc agc cgt gtg cgc          528
Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg
                165                 170                 175

gtc cct gca gct gcc acg ctg gct gtg ggc acc atg tgt ggc gtg tat          576
Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr
            180                 185                 190

ggc tct gcc ctt tgc aat gcc cag cgc tgg ctc aac ttc cag gga gac          624
Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
        195                 200                 205

aca ggc aat ggt ctg gcc cca ctg gac atc acc ttc cac ctc ttg gag          672
Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
    210                 215                 220

cct ggc cag gcc gtg ggg agt ggg att cag cct ctg aat gag ggg gtt          720
Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val
225                 230                 235                 240

gca cgt tgc aat gag tcc caa ggt gac gac gtg gcg acc tgc tcc tgc          768
Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys
                245                 250                 255

caa gac tgt gct gca tcc tgt cct gcc ata gcc cgc ccc cag gcc ctc          816
Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu
                260                 265                 270

gac tcc acc ttc tac ctg ggc cag atg ccg ggc agt ctg gtc ctc atc          864
Asp Ser Thr Phe Tyr Leu Gly· Gln Met Pro Gly Ser Leu Val Leu Ile
            275                 280                 285
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14

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atc atc ctc tgc tct gtc ttc gct gtg gtc acc atc ctg ctt gtg gga        912
Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly
    290                 295                 300

ttc cgt gtg gcc ccc gcc agg gac aaa agc aag atg gtg gac ccc aag        960
Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys
305                 310                 315                 320

aag ggc acc agc ctc tct gac aag ctc agc ttc tcc acc cac acc ctc       1008
Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu
                325                 330                 335

ctt ggc cag ttc ttc cag ggc tgg ggc acg tgg gtg gct tcg tgg cct       1056
Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro
                340                 345                 350

ctg acc atc ttg gtg cta tct gtc atc ccg gtg gtg gcc ttg gca gcg       1104
Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala
        355                 360                 365

ggc ctg gtc ttt aca gaa ctc act acg gac ccc gtg gag ctg tgg tcg       1152
Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
    370                 375                 380

gcc ccc aac agc caa gcc cgg agt gag aaa gct ttc cat gac cag cat       1200
Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His
385                 390                 395                 400

ttc ggc ccc ttc ttc cga acc aac cag gtg atc ctg acg gct cct aac       1248
Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn
                405                 410                 415

cgg tcc agc tac agg tat gac tct ctg ctg ctg ggg ccc aag aac ttc       1296
Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
                420                 425                 430

agc gga atc ctg gac ctg gac ttg ctg ctg gag ctg cta gag ctg cag       1344
Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln
        435                 440                 445

gag agg ctg cgg cac ctc cag gta tgg tcg ccc gaa gca cag cgc aac       1392
Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn
    450                 455                 460

atc tcc ctg cag gac atc tgc tac gcc ccc ctc aat ccg gac aat acc       1440
Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr
465                 470                 475                 480

agt ctc tac gac tgc tgc atc aac agc ctc ctg cag tat ttc cag aac       1488
Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn
                485                 490                 495

aac cgc acg ctc ctg ctg ctc aca gcc aac cag aca ctg atg ggg cag       1536
Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln
                500                 505                 510

acc tcc caa gtc gac tgg aag gac cat ttt ctg tac tgt gcc aat gcc       1584
Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
                515                 520                 525

ccg ctc acc ttc aag gat ggc aca gcc ctg gcc ctg agc tgc atg gct       1632
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Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala
    530               535               540

gac tac ggg gcc cct gtc ttc ccc ttc ctt gcc att ggg ggg tac aaa    1680
Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys
545               550               555               560

gga aag gac tat tct gag gca gag gcc ctg atc atg acg ttc tcc ctc    1728
Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu
              565               570               575

aac aat tac cct gcc ggg gac ccc cgt ctg gcc cag gcc aag ctg tgg    1776
Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp
              580               585               590

gag gag gcc ttc tta gag gaa atg cga gcc ttc cag cgt cgg atg gct    1824
Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala
          595               600               605

ggc atg ttc cag gtc acg ttc acg gct gag cgc tct ctg gaa gac gag    1872
Gly Met Phe Gln Val Thr Phe Thr Ala Glu Arg Ser Leu Glu Asp Glu
      610               615               620

atc aat cgc acc aca gct gaa gac ctg ccc atc ttt gcc acc agc tac    1920
Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr
625               630               635               640

att gtc ata ttc ctg tac atc tct ctg gcc ctg ggc agc tat tcc agc    1968
Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser
              645               650               655

tgg agc cga gtg atg gtg gac tcc aag gcc acg ctg ggc ctc ggc ggg    2016
Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
              660               665               670

gtg gcc gtg gtc ctg gga gca gtc atg gct gcc atg ggc ttc ttc tcc    2064
Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser
          675               680               685

tac ttg ggt atc cgc tcc tcc ctg gtc atc ctg caa gtg gtt cct ttc    2112
Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe
      690               695               700

ctg gtg ctg tcc gtg ggg gct gat aac atc ttc atc ttt gtt ctc gag    2160
Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
705               710               715               720

tac cag agg ctg ccc cgg agg cct ggg gag cca cga gag gtc cac att    2208
Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile
              725               730               735

ggg cga gcc cta ggc agg gtg gct ccc agc atg ctg ttg tgc agc ctc    2256
Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu
          740               745               750

tct gag gcc atc tgc ttc ttc cta ggg gcc ctg acc ccc atg cca gct    2304
Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
          755               760               765

gtg cgg acc ttt gcc ctg acc tct ggc ctt gca gtg atc ctt gac ttc    2352
Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe
```

16

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ctc ctg cag atg tca gcc ttt gtg gcc ctg ctc tcc ctg gac agc aag    2400
Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785                 790                 795                 800

agg cag gag gcc tcc cgg ttg gac gtc tgc tgc tgt gtc aag ccc cag    2448
Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln
                805                 810                 815

gag ctg ccc ccg cct ggc cag gga gag ggg ctc ctg ctt ggc ttc ttc    2496
Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe
            820                 825                 830

caa aag gct tat gcc ccc ttc ctg ctg cac tgg atc act cga ggt gtt    2544
Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val
            835                 840                 845

gtg ctg ctg ctg ttt ctc gcc ctg ttc gga gtg agc ctc tac tcc atg    2592
Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met
            850                 855                 860

tgc cac atc agc gtg gga ctg gac cag gag ctg gcc ctg ccc aag gac    2640
Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
865                 870                 875                 880

tcg tac ctg ctt gac tat ttc ctc ttt ctg aac cgc tac ttc gag gtg    2688
Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val
                885                 890                 895

ggg gcc ccg gtg tac ttt gtt acc acc ttg ggc tac aac ttc tcc agc    2736
Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser
            900                 905                 910

gag gct ggg atg aat gcc atc tgc tcc agt gca ggc tgc aac aac ttc    2784
Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe
            915                 920                 925

tcc ttc acc cag aag atc cag tat gcc aca gag ttc cct gag cag tct    2832
Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser
            930                 935                 940

tac ctg gcc atc cct gcc tcc tcc tgg gtg gat gac ttc att gac tgg    2880
Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
945                 950                 955                 960

ctg acc ccg tcc tcc tgc tgc cgc ctt tat ata tct ggc ccc aat aag    2928
Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys
                965                 970                 975

gac aag ttc tgc ccc tcg acc gtc aac tct ctg aac tgc cta aag aac    2976
Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn
                980                 985                 990

tgc atg agc atc acg atg ggc tct  gtg agg ccc tcg gtg  gag cag ttc    3024
Cys Met Ser Ile Thr Met Gly Ser  Val Arg Pro Ser Val  Glu Gln Phe
            995                 1000                1005

cat aag  tat ctt ccc tgg ttc  ctg aac gac cgg ccc  aac atc aaa    3069
His Lys  Tyr Leu Pro Trp Phe  Leu Asn Asp Arg Pro  Asn Ile Lys
        1010                1015                1020
```

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tgt ccc aaa ggc ggc ctg gca   gca tac agc acc tct   gtg aac ttg      3114
Cys Pro Lys Gly Gly Leu Ala   Ala Tyr Ser Thr Ser   Val Asn Leu
    1025            1030                1035

act tca gat ggc cag gtt tta   gcc tcc agg ttc atg   gcc tat cac      3159
Thr Ser Asp Gly Gln Val Leu   Ala Ser Arg Phe Met   Ala Tyr His
    1040            1045                1050

aag ccc ctg aaa aac tca cag   gat tac aca gaa gct   ctg cgg gca      3204
Lys Pro Leu Lys Asn Ser Gln   Asp Tyr Thr Glu Ala   Leu Arg Ala
    1055            1060                1065

gct cga gag ctg gca gcc aac   atc act gct gac ctg   cgg aaa gtg      3249
Ala Arg Glu Leu Ala Ala Asn   Ile Thr Ala Asp Leu   Arg Lys Val
    1070            1075                1080

cct gga aca gac ccg gct ttt   gag gtc ttc ccc tac   acg atc acc      3294
Pro Gly Thr Asp Pro Ala Phe   Glu Val Phe Pro Tyr   Thr Ile Thr
    1085            1090                1095

aat gtg ttt tat gag cag tac   ctg acc atc ctc cct   gag ggg ctc      3339
Asn Val Phe Tyr Glu Gln Tyr   Leu Thr Ile Leu Pro   Glu Gly Leu
    1100            1105                1110

ttc atg ctc agc ctc tgc ctt   gtg ccc acc ttc gct   gtc tcc tgc      3384
Phe Met Leu Ser Leu Cys Leu   Val Pro Thr Phe Ala   Val Ser Cys
    1115            1120                1125  .

ctc ctg ctg ggc ctg gac ctg   cgc tcc ggc ctc ctc   aac ctg ctc      3429
Leu Leu Leu Gly Leu Asp Leu   Arg Ser Gly Leu Leu   Asn Leu Leu
    1130            1135                1140

tcc att gtc atg atc ctc gtg   gac act gtc ggc ttc   atg gcc ctg      3474
Ser Ile Val Met Ile Leu Val   Asp Thr Val Gly Phe   Met Ala Leu
    1145            1150                1155

tgg gac atc agt tac aat gct   gtg tcc ctc atc aac   ctg gtc tcg      3519
Trp Asp Ile Ser Tyr Asn Ala   Val Ser Leu Ile Asn   Leu Val Ser
    1160            1165                1170

gcg gtg ggc atg tct gtg gag   ttt gtg tcc cac att   acc cgc tcc      3564
Ala Val Gly Met Ser Val Glu   Phe Val Ser His Ile   Thr Arg Ser
    1175            1180                1185

ttt gcc atc agc acc aag ccc   acc tgg ctg gag agg   gcc aaa gag      3609
Phe Ala Ile Ser Thr Lys Pro   Thr Trp Leu Glu Arg   Ala Lys Glu
    1190         .  1195                1200

gcc acc atc tct atg gga agt   gcg gtg ttt gca ggt   gtg gcc atg      3654
Ala Thr Ile Ser Met Gly Ser   Ala Val Phe Ala Gly   Val Ala Met
    1205            1210                1215

acc aac ctg cct ggc atc ctt   gtc ctg ggc ctc gcc   aag gcc cag      3699
Thr Asn Leu Pro Gly Ile Leu   Val Leu Gly Leu Ala   Lys Ala Gln
    1220            1225                1230

ctc att cag atc ttc ttc ttc   cgc ctc aac ctc ctg   atc act ctg      3744
Leu Ile Gln Ile Phe Phe Phe   Arg Leu Asn Leu Leu   Ile Thr Leu
    1235            1240                1245
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18

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ctg ggc  ctg ctg cat ggc ttg  gtc ttc ctg ccc gtc  atc ctc agc        3789
Leu Gly  Leu Leu His Gly Leu  Val Phe Leu Pro Val  Ile Leu Ser
    1250             1255              1260

tac gtg  ggg cct gac gtt aac  ccg gct ctg gca ctg  gag cag aag        3834
Tyr Val  Gly Pro Asp Val Asn  Pro Ala Leu Ala Leu  Glu Gln Lys
    1265             1270              1275

cgg gct  gag gag gcg gtg gca  gca gtc atg gtg gcc  tct tgc cca        3879
Arg Ala  Glu Glu Ala Val Ala  Ala Val Met Val Ala  Ser Cys Pro
    1280             1285              1290

aat cac  ccc tcc cga gtc tcc  aca gct gac aac atc  tat gtc aac        3924
Asn His  Pro Ser Arg Val Ser  Thr Ala Asp Asn Ile  Tyr Val Asn
    1295             1300              1305

cac agc  ttt gaa ggt tct atc  aaa ggt gct ggt gcc  atc agc aac        3969
His Ser  Phe Glu Gly Ser Ile  Lys Gly Ala Gly Ala  Ile Ser Asn
    1310             1315              1320

ttc ttg  ccc aac aat ggg cgg  cag ttc tga                            3999
Phe Leu  Pro Asn Asn Gly Arg  Gln Phe
    1325             1330
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<400> 4

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Met Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu
1               5                   10                  15


Arg Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr
                20                  25                  30


Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser
            35                  40                  45


Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg
        50                  55                  60


Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg
65                  70                  75                  80


Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu
                85                  90                  95
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19

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Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
            100             105             110

Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr
            115             120             125

Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln
130             135             140

Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
145             150             155             160

Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg
                165             170             175

Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr
            180             185             190

Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
            195             200             205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
    210             215             220

Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val
225             230             235             240

Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys
            245             250             255

Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu
            260             265             270

Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile
    275             280             285

Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly
    290             295             300

Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys
305             310             315             320

Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu
            325             330             335

Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro
```

20

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                    340                     345                     350


Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala
        355                 360                 365


Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
    370                 375                 380


Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His
385                 390                 395                 400


Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn
                405                 410                 415


Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
            420                 425                 430


Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln
        435                 440                 445


Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn
    450                 455                 460


Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr
465                 470                 475                 480


Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn
            485                 490                 495


Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln
        500                 505                 510


Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
        515                 520                 525


Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala
    530                 535                 540


Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys
545                 550                 555                 560


Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu
            565                 570                 575


Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp
            580                 585                 590
```

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Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala
    595                 600             605

Gly Met Phe Gln Val Thr Phe Thr Ala Glu Arg Ser Leu Glu Asp Glu
    610             615                 620

Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr
625             630                 635                 640

Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser
            645                 650                 655

Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
            660                 665                 670

Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser
    675                 680                 685

Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe
    690                 695                 700

Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
705                 710                 715                 720

Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile
            725                 730                 735

Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu
            740                 745                 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
    755                 760                 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe
    770                 775                 780

Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785                 790                 795                 800

Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln
            805                 810                 815

Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe
            820                 825                 830
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22

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Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val
    835             840             845

Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met
    850             855             860

Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
865             870             875             880

Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val
            885             890             895

Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser
            900             905             910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe
            915             920             925

Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser
    930             935             940

Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
945             950             955             960

Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys
            965             970             975

Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn
            980             985             990

Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe
    995             1000            1005

His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys
    1010            1015            1020

Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu
    1025            1030            1035

Thr Ser Asp Gly Gln Val Leu Ala Ser Arg Phe Met Ala Tyr His
    1040            1045            1050

Lys Pro Leu Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala
    1055            1060            1065
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Ala Arg Glu Leu Ala Ala Asn Ile Thr Ala Asp Leu Arg Lys Val
    1070   1075   1080

Pro Gly Thr Asp Pro Ala Phe Glu Val Phe Pro Tyr Thr Ile Thr
    1085   1090   1095

Asn Val Phe Tyr Glu Gln Tyr Leu Thr Ile Leu Pro Glu Gly Leu
    1100   1105   1110

Phe Met Leu Ser Leu Cys Leu Val Pro Thr Phe Ala Val Ser Cys
    1115   1120   1125

Leu Leu Leu Gly Leu Asp Leu Arg Ser Gly Leu Leu Asn Leu Leu
    1130   1135   1140

Ser Ile Val Met Ile Leu Val Asp Thr Val Gly Phe Met Ala Leu
    1145   1150   1155

Trp Asp Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val Ser
    1160   1165   1170

Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg Ser
    1175   1180   1185

Phe Ala Ile Ser Thr Lys Pro Thr Trp Leu Glu Arg Ala Lys Glu
    1190   1195   1200

Ala Thr Ile Ser Met Gly Ser Ala Val Phe Ala Gly Val Ala Met
    1205   1210   1215

Thr Asn Leu Pro Gly Ile Leu Val Leu Gly Leu Ala Lys Ala Gln
    1220   1225   1230

Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr Leu
    1235   1240   1245

Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Ile Leu Ser
    1250   1255   1260

Tyr Val Gly Pro Asp Val Asn Pro Ala Leu Ala Leu Glu Gln Lys
    1265   1270   1275

Arg Ala Glu Glu Ala Val Ala Ala Val Met Val Ala Ser Cys Pro
    1280   1285   1290

Asn His Pro Ser Arg Val Ser Thr Ala Asp Asn Ile Tyr Val Asn

24

His Ser Phe Glu Gly Ser Ile Lys Gly Ala Gly Ala Ile Ser Asn
    1310   1315   1320

Phe Leu Pro Asn Asn Gly Arg Gln Phe
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<210> 5

<211> 885

<212> DNA

<213> Rattus sp.

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gcctccttca gtacttccag aacaaccgca ccctcctgat gctcacggcc aaccagactc   180

tgaatggcca gacctccctg gtggactgga aggaccattt cctctactgt gcaaatgccc   240

ctctcacgtt caaagatggc acgtctctgg ccctgagctg catggctgac tacggggctc   300

ctgtcttccc cttccttgct gttgggggat accaaggcac ggactattcc gaggcagaag   360

cgctgatcat aaccttctct ctcaataact accccgctga tgatccccgc atggcccagg   420

ccaagctctg ggaggaggct ttcttgaagg aaatggaatc cttccagagg aacacaagtg   480

acaagttcca ggttgcgttc tcagctgagc gctctctgga ggatgagatc aaccgcacca   540

ccatccagga cctgcctgtc tttgccgtca gctacattat cgtcttcctg tacatctccc   600

tggccctggg cagctactcc agatgcagcc gagtagcggt ggagtccaag gctactctgg   660

gcctaggtgg ggtgatagtg tgctgggagc agttctggct tgcatggggc ttctaactcc   720

tacctgggtg tcccctcttc tctggttatc atccaagtgg tacctttcct ggtgcttaag   780

ctgtgggagc tggacacatc tacatcctag acttgagtac cagaggtacc taggaagccg   840

cggaacagcg aaaaggacac attgggcgca ccctgggcat gtggc   885

<210> 6

<211> 458

<212> DNA

<213> Rattus sp.

<400> 6

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acggctttgc cccagaactt gcccacggag ctaatgctgc tagaagctct ttgcccaaaa       180

gtgaccaaaa gttctaatgg agtaggagct tgtccatgct tctgctgatg agggatcatg       240

aaggtcttcc ctctggttgt cctcaaggcc tggggggagg ttgttcagag aaaaatggct       300

ggcattcctg ccacgaggca accggcagct tggcactgac tccttggtct cataggtccc       360

taaggcttgg tcagattact cctcatggag agactatctt aagtatctaa gctatcgatt       420

gggatgcatc gctgttcatt aaaaaggcta tggctatg                               458
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<210> 7

<211> 896

<212> DNA

<213> Rattus sp.

<400> 7

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gatgtcccaa agggggtcta gcagcgtata gaacgtctgt gaatttgagc tcagatggcc       120

aggttatagc ctcccagttc atggcctacc acaagccctt aaggaactca caggacttca       180

cagaagctct ccgggcgtcc cggttgctag cagccaacat cacagctgac ctacggaagg       240

tgcctgggac agatccaaac tttgaggtct tcccttacac gatctccaac gtgttctacc       300

agcaatacct gacggtcctt cctgagggaa tcttcaccct tgctctttgc tttgtgccca       360

cctttgttgt ctgctacctc ctactgggcc tggacatgtg ctcaggatc ctcaacctac       420

tctccatcat tatgattctc gtggacacca ttggcctcat ggctgtgtgg ggtatcagct       480

ataatgcggt atccctcatc aaccttgtca cggcagtggg catgtctgtg gagtttgtgt       540

cccacatcac tcggtccttt gcttgtaagc accaagccta cccggctgga gagggctaaa       600

agatgctact gtcttcatgg gcagtgcggt gtttgctgga gtggccatga ccaacttccc       660

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ttgtcctcag ctatctggga ccagatgtaa ccaaggctct gctacccgga ggagaaacta       840

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<210> 8

<211> 3124

<212> DNA

<213> Rattus sp.

<400> 8

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tccagaacaa ccgcaccctc ctgatgctca cggccaacca gactctgaat ggccagacct     180

ccctggtgga ctggaaggac catttcctct actgtgcaaa tgccctctc acgttcaaag     240

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ttgctgttgg gggataccaa ggcacggact attccgaggc agaagcgctg atcataacct     360

tctctctcaa taactacccc gctgatgatc cccgcatggc ccaggccaag ctctgggagg     420

aggctttctt gaaggaaatg gaatccttcc agaggaacac aagtgacaag ttccaggttg     480

cgttctcagc tgagcgctct ctggaggatg agatcaaccg caccaccatc caggacctgc     540

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<210>  9
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<211> 4484

<212> DNA

<213> Rattus sp.

<400> 9

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29

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30

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<211>  3993
<212>  DNA

<213>  Rattus sp.

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garytntaya  cnccnaarca  ygargcnggn  gtntgyacnt  tytaygarga  rtgyggnaar    120

aayccngary  tnwsnggngg  nytnacnwsn  ytnwsnaayg  tnwsntgyyt  nwsnaayacn    180

ccngcnmgnc  aygtnacngg  ngarcayytn  gcnytnytnc  armgnathtg  yccnmgnytn    240
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31

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tayaayggnc  cnaayacnac  nttygcntgy  tgywsnacna  arcarytnyt  nwsnytngar   300

wsnwsnatgw  snathacnaa  rgcnytnytn  acnmgntgyc  cngcntgyws  ngayaaytty   360

gtnwsnytnc  aytgycayaa  yacntgywsn  ccngaycarw  snytnttyat  haaygtnacn   420

mgngtngtng  armgnggngc  nggngarccn  ccngcngtng  tngcntayga  rgcnttytay   480

carmgnwsnt  tygcngaraa  rgcntaygar  wsntgywsnc  argtnmgnat  hccngcngcn   540

gcnwsnytng  cngtnggnws  natgtgyggn  gtntayggnw  sngcnytntg  yaaygcncar   600

mgntggytna  ayttycargg  ngayacnggn  aayggnytng  cnccnytnga  yathacntty   660

cayytnytng  arccnggnca  rgcnytnccn  gayggnathc  arccnytnaa  yggnaarath   720

gcnccntgya  aygarwsnca  rggngaygay  wsngcngtnt  gywsntgyca  rgaytgygcn   780

gcnwsntgyc  cngtnathcc  nccnccngar  gcnytnmgnc  cnwsnttyta  yatgggnmgn   840

atgccnggnt  ggytngcnyt  nathathath  ttyacngcng  tnttygtnyt  nytnwsngcn   900

gtnytngtnm  gnytnmgngt  ngtnwsnaay  mgnaayaara  ayaargcnga  rggnccncar   960

gargcnccna  arytnccnca  yaarcayaar  ytnwsnccnc  ayacnathyt  nggnmgntty  1020

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athgtngtna  thgcnytngc  ngcnggnytn  acnttyathg  arytnacnac  ngayccngtn  1140

garytntggw  sngcnccnaa  rwsncargcn  mgnaargara  arwsnttyca  ygaygarcay  1200

ttyggnccnt  tyttymgnac  naaycarath  ttygtnacng  cnmgnaaymg  nwsnwsntay  1260

aartaygayw  snytnytnyt  nggnwsnaar  aayttywsng  gnathytnws  nytngaytty  1320

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wsntgyatgg  cngaytaygg  ngcnccngtn  ttyccnttyy  tngcngtngg  nggntaycar  1680

ggnacngayt  aywsngargc  ngargcnytn  athathacnt  tywsnytnaa  yaaytayccn  1740

gcngaygayc  cnmgnatggc  ncargcnaar  ytntgggarg  argcnttyyt  naargaratg  1800

garwsnttyc  armgnaayac  nwsngayaar  ttycargtng  cnttywsngc  ngarmgnwsn  1860

ytngargayg  arathaaymg  nacnacnath  cargayytnc  cngtnttygc  ngtnwsntay  1920

athathgtnt  tyytntayat  hwsnytngcn  ytnggnwsnt  aywsnmgntg  ywsnmgngtn  1980

gcngtngarw  snaargcnac  nytnggnytn  ggnggngtna  thgtngtnyt  nggngcngtn  2040
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32

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ytngcngcna tgggnttyta ywsntayytn ggngtnccnw snwsnytngt nathathcar    2100

gtngtnccnt tyytngtnyt ngcngtnggn gcngayaaya thttyathtt ygtnytngar    2160

taycarmgny tnccnmgnat gccnggngar carmgngarg cncayathgg nmgnacnytn    2220

ggnwsngtng cnccnwsnat gytnytntgy wsnytnwsng argcnathtg yttyttyytn    2280

ggngcnytna cnccnatgcc ngcngtnmgn acnttygcny tnacnwsngg nytngcnath    2340

athytngayt tyytnytnca ratgacngcn ttygtngcny tnytnwsnyt ngaywsnaar    2400

mgncargarg cnwsnmgncc ngaygtnytn tgytgyttyw snacnmgnaa rytnccnccn    2460

ccnaargara argarggnyt nytnytnmgn ttyttymgna arathtaygc nccnttyytn    2520

ytncaymgnt tyathmgncc ngtngtnatg ytnytnttyy tnacnytntt yggngcnaay    2580

ytntayytna tgtgyaayat haaygtnggn ytngaycarg arytngcnyt nccnaargay    2640

wsntayytna thgaytaytt yytnttyytn aaymgntayy tngargtngg nccnccngtn    2700

tayttygtna cnacnwsngg nttyaaytty wsnwsngarg cnggnatgaa ygcnacntgy    2760

wsnwsngcng gntgyaarws nttywsnytn acncaraara thcartaygc nwsngartty    2820

ccngaycarw sntaygtngc nathgcngcn wsnwsntggg tngaygaytt yathgaytgg    2880

ytnacnccnw snwsnwsntg ytgymgnytn tayathmgng gnccncayaa rgaygartty    2940

tgyccnwsna cngayacnws nttyaaytgy ytnaaraayt gyatgaaymg nacnytnggn    3000

ccngtnmgnc cnacngcnga rcarttycay aartayytnc cntggttyyt naaygayccn    3060

ccnaayathm gntgyccnaa rggnggnytn gcngcntaym gnacnwsngt naayytnwsn    3120

wsngayggnc argtnathgc nwsncartty atggcntayc ayaarccnyt nmgnaaywsn    3180

cargayttya cngargcnyt nmgngcnwsn mgnytnytng cngcnaayat hacngcngay    3240

ytnmgnaarg tnccnggnac ngayccnaay ttygargtnt tyccntayac nathwsnaay    3300

gtnttytayc arcartayyt nacngtnytn ccngarggna thttyacnyt ngcnytntgy    3360

ttygtnccna cnttygtngt ntgytayytn ytnytnggny tngayatgtg ywsnggnath    3420

ytnaayytny tnwsnathat hatgathytn gtngayacna thggnytnat ggcngtntgg    3480

ggnathwsnt ayaaygcngt nwsnytnath aayytngtna cngcngtngg natgwsngtn    3540

garttygtnw sncayathac nmgnwsntty gcngtnwsna cnaarccnac nmgnytngar    3600

mgngcnaarg aygcnacngt nttyatgggn wsngcngtnt tygcnggngt ngcnatgacn    3660

aayttyccng gnathytnat hytnggntty gcncargcnc arytnathca rathttytty    3720

ttymgnytna ayytnytnat hacnytnytn ggnytnytnc ayggnytngt nttyytnccn    3780

gtngtnytnw sntayytngg nccngaygtn aaycargcny tngtncarga rgaraarytn    3840
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33

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gcnwsngarg cngcngtngc nccngarccn wsntgyccnc artayccnws nccngcngay      3900

gcngaygcna aygtnaayta yggnttygcn ccngarytng cncayggngc naaygcngcn      3960

mgnwsnwsny tnccnaarws ngaycaraar tty                                   3993
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<211> 4002

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<220>

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atg gca gct gcc tgg cag gga tgg ctg ctc tgg gcc ctg ctc ctg aat       48
Met Ala Ala Ala Trp Gln Gly Trp Leu Leu Trp Ala Leu Leu Leu Asn
1               5                   10                  15

tcg gcc cag ggt gag ctc tac aca ccc act cac aaa gct ggc ttc tgc       96
Ser Ala Gln Gly Glu Leu Tyr Thr Pro Thr His Lys Ala Gly Phe Cys
                20                  25                  30

acc ttt tat gaa gag tgt ggg aag aac cca gag ctt tct gga ggc ctc      144
Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu
            35                  40                  45

aca tca cta tcc aat atc tcc tgc ttg tct aat acc cca gcc cgc cat      192
Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His
        50                  55                  60

gtc aca ggt gac cac ctg gct ctt ctc cag cgc gtc tgt ccc cgc cta      240
Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu
65                  70                  75                  80

tac aat ggc ccc aat gac acc tat gcc tgt tgc tct acc aag cag ctg      288
Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu
                85                  90                  95

gtg tca tta gac agt agc ctg tct atc acc aag gcc ctc ctt aca cgc      336
Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
                100                 105                 110

tgc ccg gca tgc tct gaa aat ttt gtg agc ata cac tgt cat aat acc      384
Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr
            115                 120                 125

tgc agc cct gac cag agc ctc ttc atc aat gtt act cgc gtg gtt cag      432
```

34

```
Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln
    130             135             140

cgg gac cct gga cag ctt cct gct gtg gtg gcc tat gag gcc ttt tat      480
Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
145             150             155             160

caa cgc agt ttt gca gag aag gcc tat gag tcc tgt agc cgg gtg cgc      528
Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg
                165             170             175

atc cct gca gct gcc tcg ctg gct gtg ggc agc atg tgt gga gtg tat      576
Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr
                180             185             190

ggc tct gcc ctc tgc aat gct cag cgc tgg ctc aac ttc caa gga gac      624
Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
                195             200             205

aca ggg aat ggc ctg gct ccg ctg gac atc acc ttc cac ctc ttg gag      672
Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
    210             215             220

cct ggc cag gcc ctg gca gat ggg atg aag cca ctg gat ggg aag atc      720
Pro Gly Gln Ala Leu Ala Asp Gly Met Lys Pro Leu Asp Gly Lys Ile
225             230             235             240

aca ccc tgc aat gag tcc cag ggt gaa gac tcg gca gcc tgt tcc tgc      768
Thr Pro Cys Asn Glu Ser Gln Gly Glu Asp Ser Ala Ala Cys Ser Cys
                245             250             255

cag gac tgt gca gca tcc tgc cct gtc atc cct ccg ccc ccg gcc ctg      816
Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Pro Ala Leu
                260             265             270

cgc cct tct ttc tac atg ggt cga atg cca ggc tgg ctg gct ctc atc      864
Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile
            275             280             285

atc atc ttc act gct gtc ttt gta ttg ctc tct gtt gtc ctt gtg tat      912
Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Val Val Leu Val Tyr
    290             295             300

ctc cga gtg gct tcc aac agg aac aag aac aag aca gca ggc tcc cag      960
Leu Arg Val Ala Ser Asn Arg Asn Lys Asn Lys Thr Ala Gly Ser Gln
305             310             315             320

gaa gcc ccc aac ctc cct cgt aag cgc aga ttc tca cct cac act gtc     1008
Glu Ala Pro Asn Leu Pro Arg Lys Arg Arg Phe Ser Pro His Thr Val
                325             330             335

ctt ggc cgg ttc ttc gag agc tgg gga aca agg gtg gcc tca tgg cca     1056
Leu Gly Arg Phe Phe Glu Ser Trp Gly Thr Arg Val Ala Ser Trp Pro
            340             345             350

ctc act gtc ttg gca ctg tcc ttc ata gtt gtg ata gcc ttg tca gta     1104
Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ser Val
            355             360             365

ggc ctg acc ttt ata gaa ctc acc aca gac cct gtg gaa ctg tgg tcg     1152
Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
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35

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gcc cct aaa agc caa gcc cgg aaa gaa aag gct ttc cat gac gag cat   1200
Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ala Phe His Asp Glu His
385                 390                 395                 400

ttt ggc ccc ttc ttc cga acc aac cag att ttt gtg aca gct aag aac   1248
Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Lys Asn
                405                 410                 415

agg tcc agc tac aag tac gac tcc ctg ctg cta ggg ccc aag aac ttc   1296
Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
                420                 425                 430

agt ggg atc cta tcc ctg gac ttg ctg cag gag ctg ttg gag cta cag   1344
Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln
                435                 440                 445

gag aga ctt cga cac ctg caa gtg tgg tcc cat gag gca cag cgc aac   1392
Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn
450                 455                 460

atc tcc ctc cag gac atc tgc tat gct ccc ctc aac ccg cat aac acc   1440
Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr
465                 470                 475                 480

agc ctc act gac tgc tgt gtc aac agc ctc ctt caa tac ttc cag aac   1488
Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn
                485                 490                 495

aac cac aca ctc ctg ctg ctc aca gcc aat cag act ctg aat ggc cag   1536
Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln
                500                 505                 510

acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gcc aat gcc   1584
Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
                515                 520                 525

cct ctc acg tac aaa gat ggc aca gcc ctg gcc ctg agc tgc ata gct   1632
Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala
530                 535                 540

gac tac ggg gca cct gtc ttc ccc ttc ctt gct gtt ggg ggc tac caa   1680
Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln
545                 550                 555                 560

ggg acg gac tac tcg gag gca gaa gcc ctg atc ata acc ttc tct atc   1728
Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile
                565                 570                 575

aat aac tac ccc gct gat gat ccc cgc atg gcc cac gcc aag ctc tgg   1776
Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp
                580                 585                 590

gag gag gct ttc ttg aag gaa atg caa tcc ttc cag aga agc aca gct   1824
Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala
                595                 600                 605

gac aag ttc cag att gcg ttc tca gct gag cgt tct ctg gag gac gag   1872
Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu
                610                 615                 620
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36

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atc aat cgc act acc atc cag gac ctg cct gtc ttt gcc atc agc tac    1920
Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr
625                 630                 635                 640

ctt atc gtc ttc ctg tac atc tcc ctg gcc ctg ggc agc tac tcc aga    1968
Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg
                645                 650                 655

tgg agc cga gtt gcg gtg gat tcc aag gct act ctg ggc cta ggt ggg    2016
Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
                660                 665                 670

gtg gct gtt gtg ctg gga gca gtc gtc gct gcc atg ggc ttc tac tcc    2064
Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser
                675                 680                 685

tac ctg ggt gtc ccc tcc tct ctg gtc atc att caa gtg gta cct ttc    2112
Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe
        690                 695                 700

ctg gtg ctg gct gtg gga gct gac aac atc ttc atc ttt gtt ctt gag    2160
Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
705                 710                 715                 720

tac cag agg ctg cct agg atg ccc ggg gag cag cga gag gct cac att    2208
Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile
                725                 730                 735

ggc cgc acc ctg ggt agt gtg gcc ccc agc atg ctg ctg tgc agc ctc    2256
Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu
                740                 745                 750

tct gag gcc atc tgc ttc ttt cta ggg gcc ctg acc tcc atg cca gct    2304
Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala
            755                 760                 765

gtg agg acc ttt gcc ttg acc tct ggc tta gca atc atc ttt gac ttc    2352
Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe
        770                 775                 780

ctg ctc cag atg aca gcc ttt gtg gcc ctg ctc tcc ctg gat agc aag    2400
Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785                 790                 795                 800

agg cag gag gcc tct cgc ccc gac gtc gtg tgc tgc ttt tca agc cga    2448
Arg Gln Glu Ala Ser Arg Pro Asp Val Val Cys Cys Phe Ser Ser Arg
                805                 810                 815

aat ctg ccc cca ccg aaa caa aaa gaa ggc ctc tta ctt tgc ttc ttc    2496
Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe
                820                 825                 830

cgc aag ata tac act ccc ttc ctg ctg cac aga ttc atc cgc cct gtt    2544
Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val
                835                 840                 845

gtg ctg ctg ctc ttt ctg gtc ctg ttt gga gca aac ctc tac tta atg    2592
Val Leu Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met
        850                 855                 860
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37

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tgc aac atc agc gtg ggg ctg gac cag gat ctg gct ctg ccc aag gat          2640
Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp
865             870             875             880

tcc tac ctg ata gac tac ttc ctc ttt ctg aac cgg tac ttg gaa gtg          2688
Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val
            885             890             895

ggg cct cca gtg tac ttt gac acc acc tca ggc tac aac ttt tcc acc          2736
Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr
            900             905             910

gag gca ggc atg aac gcc att tgc tct agt gca ggc tgt gag agc ttc          2784
Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe
            915             920             925

tcc cta acc cag aaa atc cag tat gcc agt gaa ttc cct aat cag tct          2832
Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser
            930             935             940

tat gtg gct att gct gca tcc tcc tgg gta gat gac ttc atc gac tgg          2880
Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
945             950             955             960

ctg acc cca tcc tcc tcc tgc tgc cgc att tat acc cgt ggc ccc cat          2928
Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His
            965             970             975

aaa gat gag ttc tgt ccc tca acg gat act tcc ttc aac tgt ctc aaa          2976
Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys
            980             985             990

aac tgc atg aac cgc act ctg ggt  ccc gtg aga ccc aca  aca gaa cag        3024
Asn Cys Met Asn Arg Thr Leu Gly  Pro Val Arg Pro Thr  Thr Glu Gln
            995             1000            1005

ttt cat  aag tac ctg ccc tgg  ttc ctg aat gat acg  ccc aac atc          3069
Phe His  Lys Tyr Leu Pro Trp  Phe Leu Asn Asp Thr  Pro Asn Ile
    1010            1015            1020

aga tgt  cct aaa ggg ggc cta  gca gcg tat aga acc  tct gtg aat          3114
Arg Cys  Pro Lys Gly Gly Leu  Ala Ala Tyr Arg Thr  Ser Val Asn
    1025            1030            1035

ttg agc  tca gat ggc cag att  ata gcc tcc cag ttc  atg gcc tac          3159
Leu Ser  Ser Asp Gly Gln Ile  Ile Ala Ser Gln Phe  Met Ala Tyr
    1040            1045            1050

cac aag  ccc tta cgg aac tca  cag gac ttt aca gaa  gct ctc cgg          3204
His Lys  Pro Leu Arg Asn Ser  Gln Asp Phe Thr Glu  Ala Leu Arg
    1055            1060            1065

gca tcc  cgg ttg cta gca gcc  aac atc aca gct gaa  cta cgg aag          3249
Ala Ser  Arg Leu Leu Ala Ala  Asn Ile Thr Ala Glu  Leu Arg Lys
    1070            1075            1080

gtg cct  ggg aca gat ccc aac  ttt gag gtc ttc cct  tac acg atc          3294
Val Pro  Gly Thr Asp Pro Asn  Phe Glu Val Phe Pro  Tyr Thr Ile
    1085            1090            1095

tcc aat  gtg ttc tac cag caa  tac ctg acg gtt ctc  cct gag gga          3339
```

```
Ser Asn  Val Phe Tyr Gln Gln  Tyr Leu Thr Val Leu  Pro Glu Gly
    1100                 1105             1110


atc ttc  act ctt gct ctc tgc  ttc gtg ccc acc ttt  gtg gtc tgc        3384
Ile Phe  Thr Leu Ala Leu Cys  Phe Val Pro Thr Phe  Val Val Cys
    1115                 1120             1125


tac ctc  cta ctg ggc ctg gac  ata cgc tca ggc atc  ctc aac ctg        3429
Tyr Leu  Leu Leu Gly Leu Asp  Ile Arg Ser Gly Ile  Leu Asn Leu
    1130                 1135             1140


ctc tcc  atc att atg atc ctc  gtg gac acc atc ggc  ctc atg gct        3474
Leu Ser  Ile Ile Met Ile Leu  Val Asp Thr Ile Gly  Leu Met Ala
    1145                 1150             1155


gtg tgg  ggt atc agc tac aat  gct gtg tcc ctc atc  aac ctt gtc        3519
Val Trp  Gly Ile Ser Tyr Asn  Ala Val Ser Leu Ile  Asn Leu Val
    1160                 1165             1170


acg gca  gtg ggc atg tct gtg  gag ttc gtg tcc cac  att acc cgg        3564
Thr Ala  Val Gly Met Ser Val  Glu Phe Val Ser His  Ile Thr Arg
    1175                 1180             1185


tcc ttt  gct gta agc acc aag  cct acc cgg ctg gag  aga gcc aaa        3609
Ser Phe  Ala Val Ser Thr Lys  Pro Thr Arg Leu Glu  Arg Ala Lys
    1190                 1195             1200


gat gct  act atc ttc atg ggc  agt gcg gtg ttt gct  gga gtg gcc        3654
Asp Ala  Thr Ile Phe Met Gly  Ser Ala Val Phe Ala  Gly Val Ala
    1205                 1210             1215


atg acc  aac ttc ccg ggc atc  ctc atc ctg ggc ttt  gct cag gcc        3699
Met Thr  Asn Phe Pro Gly Ile  Leu Ile Leu Gly Phe  Ala Gln Ala
    1220                 1225             1230


cag ctt  atc cag att ttc ttc  ttc cgc ctc aac ctc  ctg atc acc        3744
Gln Leu  Ile Gln Ile Phe Phe  Phe Arg Leu Asn Leu  Leu Ile Thr
    1235                 1240             1245


ttg ctg  ggt ctg cta cac ggc  ctg gtc ttc ctg ccc  gtt gtc ctc        3789
Leu Leu  Gly Leu Leu His Gly  Leu Val Phe Leu Pro  Val Val Leu
    1250                 1255             1260


agc tat  ctg ggg cca gat gtt  aac caa gct ctg gta  ctg gag gag        3834
Ser Tyr  Leu Gly Pro Asp Val  Asn Gln Ala Leu Val  Leu Glu Glu
    1265                 1270             1275


aaa cta  gcc act gag gca gcc  atg gtc tca gag cct  tct tgc cca        3879
Lys Leu  Ala Thr Glu Ala Ala  Met Val Ser Glu Pro  Ser Cys Pro
    1280                 1285             1290


cag tac  ccc ttc ccg gct gat  gca aac acc agt gac  tat gtt aac        3924
Gln Tyr  Pro Phe Pro Ala Asp  Ala Asn Thr Ser Asp  Tyr Val Asn
    1295                 1300             1305


tac ggc  ttt aat cca gaa ttt  atc cct gaa att aat  gct gct agc        3969
Tyr Gly  Phe Asn Pro Glu Phe  Ile Pro Glu Ile Asn  Ala Ala Ser
    1310                 1315             1320


agc tct  ctg ccc aaa agt gac  caa aag ttc taa                         4002
Ser Ser  Leu Pro Lys Ser Asp  Gln Lys Phe
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39

<210> 12

<211> 1333

<212> PRT

<213> Mus sp.

<400> 12

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1               5                   10                  15


Ser Ala Gln Gly Glu Leu Tyr Thr Pro Thr His Lys Ala Gly Phe Cys
                20                  25                  30


Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu
            35                  40                  45


Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His
        50                  55                  60


Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu
65                  70                  75                  80


Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu
                85                  90                  95


Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
            100                 105                 110


Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr
        115                 120                 125


Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln
        130                 135                 140


Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
145                 150                 155                 160


Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg
                165                 170                 175


Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr
            180                 185                 190
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Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
    195             200             205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
    210             215             220

Pro Gly Gln Ala Leu Ala Asp Gly Met Lys Pro Leu Asp Gly Lys Ile
225             230             235             240

Thr Pro Cys Asn Glu Ser Gln Gly Glu Asp Ser Ala Ala Cys Ser Cys
            245             250             255

Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Ala Leu
        260             265             270

Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile
        275             280             285

Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Val Val Leu Val Tyr
    290             295             300

Leu Arg Val Ala Ser Asn Arg Asn Lys Asn Lys Thr Ala Gly Ser Gln
305             310             315             320

Glu Ala Pro Asn Leu Pro Arg Lys Arg Arg Phe Ser Pro His Thr Val
            325             330             335

Leu Gly Arg Phe Phe Glu Ser Trp Gly Thr Arg Val Ala Ser Trp Pro
            340             345             350

Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ser Val
        355             360             365

Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
    370             375             380

Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ala Phe His Asp Glu His
385             390             395             400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Lys Asn
            405             410             415

Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
            420             425             430
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Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln
        435             440             445

Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn
    450             455             460

Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr
465             470             475                 480

Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn
            485             490             495

Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln
            500             505             510

Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
        515             520             525

Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala
        530             535             540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln
545             550             555                 560

Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile
            565             570                 575

Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp
        580             585             590

Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala
    595             600             605

Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu
    610             615             620

Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr
625             630             635                 640

Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg
            645             650             655

Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
            660             665             670
```

42

Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser
        675   680   685

Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe
    690   695   700

Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
705   710   715   720

Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile
            725   730   735

Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu
        740   745   750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala
        755   760   765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe
    770   775   780

Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785   790   795   800

Arg Gln Glu Ala Ser Arg Pro Asp Val Val Cys Cys Phe Ser Ser Arg
            805   810   815

Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe
            820   825   830

Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val
    835   840   845

Val Leu Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met
    850   855   860

Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp
865   870   875   880

Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val
            885   890   895

Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr
        900   905   910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe

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              915                    920                    925


Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser
    930                 935                 940


Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
945                 950                 955                 960


Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His
                965                 970                 975


Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys
            980                 985                 990


Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr  Thr Glu Gln
        995                 1000                1005


Phe His  Lys Tyr Leu Pro Trp  Phe Leu Asn Asp Thr  Pro Asn Ile
    1010                1015                1020


Arg Cys  Pro Lys Gly Gly Leu  Ala Ala Tyr Arg Thr  Ser Val Asn
    1025                1030                1035


Leu Ser  Ser Asp Gly Gln Ile  Ile Ala Ser Gln Phe  Met Ala Tyr
    1040                1045                1050


His Lys  Pro Leu Arg Asn Ser  Gln Asp Phe Thr Glu  Ala Leu Arg
    1055                1060                1065


Ala Ser  Arg Leu Leu Ala Ala  Asn Ile Thr Ala Glu  Leu Arg Lys
    1070                1075                1080


Val Pro  Gly Thr Asp Pro Asn  Phe Glu Val Phe Pro  Tyr Thr Ile
    1085                1090                1095


Ser Asn  Val Phe Tyr Gln Gln  Tyr Leu Thr Val Leu  Pro Glu Gly
    1100                1105                1110


Ile Phe  Thr Leu Ala Leu Cys  Phe Val Pro Thr Phe  Val Val Cys
    1115                1120                1125


Tyr Leu  Leu Leu Gly Leu Asp  Ile Arg Ser Gly Ile  Leu Asn Leu
    1130                1135                1140


Leu Ser  Ile Ile Met Ile Leu  Val Asp Thr Ile Gly  Leu Met Ala
    1145                1150                1155


                             44
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Val Trp Gly Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val
    1160   1165   1170

Thr Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg
    1175   1180   1185

Ser Phe Ala Val Ser Thr Lys Pro Thr Arg Leu Glu Arg Ala Lys
    1190   1195   1200

Asp Ala Thr Ile Phe Met Gly Ser Ala Val Phe Ala Gly Val Ala
    1205   1210   1215

Met Thr Asn Phe Pro Gly Ile Leu Ile Leu Gly Phe Ala Gln Ala
    1220   1225   1230

Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr
    1235   1240   1245

Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu
    1250   1255   1260

Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Leu Glu Glu
    1265   1270   1275

Lys Leu Ala Thr Glu Ala Ala Met Val Ser Glu Pro Ser Cys Pro
    1280   1285   1290

Gln Tyr Pro Phe Pro Ala Asp Ala Asn Thr Ser Asp Tyr Val Asn
    1295   1300   1305

Tyr Gly Phe Asn Pro Glu Phe Ile Pro Glu Ile Asn Ala Ala Ser
    1310   1315   1320

Ser Ser Leu Pro Lys Ser Asp Gln Lys Phe
    1325   1330

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<212>   DNA

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aayccngary tnwsnggngg nytnacnwsn ytnwsnaaya thwsntgyyt nwsnaayacn       180

ccngcnmgnc aygtnacngg ngaycayytn gcnytnytnc armgngtntg yccnmgnytn       240

tayaayggnc cnaaygayac ntaygcntgy tgywsnacna arcarytngt nwsnytngay       300

wsnwsnytnw snathacnaa rgcnytnytn acnmgntgyc cngcntgyws ngaraaytty       360

gtnwsnathc aytgycayaa yacntgywsn ccngaycarw snytnttyat haaygtnacn       420

mgngtngtnc armgngaycc nggncarytn ccngcngtng tngcntayga rgcnttytay       480

carmgnwsnt tygcngaraa rgcntaygar wsntgywsnm gngtnmgnat hccngcngcn       540

gcnwsnytng cngtnggnws natgtgyggn gtntayggnw sngcnytntg yaaygcncar       600

mgntggytna ayttycargg ngayacnggn aayggnytng cnccnytnga yathacntty       660

cayytnytng arccnggnca rgcnytngcn gayggnatga arccnytnga yggnaarath       720

acnccntgya aygarwsnca rggngargay wsngcngcnt gywsntgyca rgaytgygcn       780

gcnwsntgyc cngtnathcc nccnccnccn gcnytnmgnc cnwsnttyta yatgggnmgn       840

atgccnggnt ggytngcnyt nathathath ttyacngcng tnttygtnyt nytnwsngtn       900

gtnytngtnt ayytnmgngt ngcnwsnaay mgnaayaara ayaaracngc nggnwsncar       960

gargcnccna ayytnccnmg naarmgnmgn ttywsnccnc ayacngtnyt nggnmgntty      1020

ttygarwsnt ggggnacnmg ngtngcnwsn tggccnytna cngtnytngc nytnwsntty      1080

athgtngtna thgcnytnws ngtnggnytn acnttyathg arytnacnac ngayccngtn      1140

garytntggw sngcnccnaa rwsncargcn mgnaargara argcnttyca ygaygarcay      1200

ttyggnccnt tyttymgnac naaycarath ttygtnacng cnaaraaymg nwsnwsntay      1260

aartaygayw snytnytnyt nggnccnaar aayttywsng gnathytnws nytngayytn      1320

ytncargary tnytngaryt ncargarmgn ytnmgncayy tncargtntg gwsncaygar      1380

gcncarmgna ayathwsnyt ncargayath tgytaygcnc cnytnaaycc ncayaayacn      1440

wsnytnacng aytgytgygt naaywsnytn ytncartayt tycaraayaa ycayacnytn      1500

ytnytnytna cngcnaayca racnytnaay ggncaracnw snytngtnga ytggaargay      1560

cayttyytnt aytgygcnaa ygcnccnytn acntayaarg ayggnacngc nytngcnytn      1620

wsntgyathg cngaytaygg ngcnccngtn ttyccnttyy tngcngtngg nggntaycar      1680

ggnacngayt aywsngargc ngargcnytn athathacnt tywsnathaa yaaytayccn      1740
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46

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gcngaygayc cnmgnatggc ncaygcnaar ytntgggarg argcnttyyt naargaratg    1800

carwsnttyc armgnwsnac ngcngayaar ttycarathg cnttywsngc ngarmgnwsn    1860

ytngargayg arathaaymg nacnacnath cargayytnc cngtnttygc nathwsntay    1920

ytnathgtnt tyytntayat hwsnytngcn ytnggnwsnt aywsnmgntg gwsnmgngtn    1980

gcngtngayw snaargcnac nytnggnytn ggnggngtng cngtngtnyt nggngcngtn    2040

gtngcngcna tgggnttyta ywsntayytn ggngtnccnw snwsnytngt nathathcar    2100

gtngtnccnt tyytngtnyt ngcngtnggn gcngayaaya thttyathtt ygtnytngar    2160

taycarmgny tnccnmgnat gccnggngar carmgngarg cncayathgg nmgnacnytn    2220

ggnwsngtng cnccnwsnat gytnytntgy wsnytnwsng argcnathtg yttyttyytn    2280

ggngcnytna cnwsnatgcc ngcngtnmgn acnttygcny tnacnwsngg nytngcnath    2340

athttygayt tyytnytnca ratgacngcn ttygtngcny tnytnwsnyt ngaywsnaar    2400

mgncargarg cnwsnmgncc ngaygtngtn tgytgyttyw snwsnmgnaa yytnccnccn    2460

ccnaarcara argarggnyt nytnytntgy ttyttymgna arathtayac nccnttyytn    2520

ytncaymgnt tyathmgncc ngtngtnytn ytnytnttyy tngtnytntt yggngcnaay    2580

ytntayytna tgtgyaayat hwsngtnggn ytngaycarg ayytngcnyt nccnaargay    2640

wsntayytna thgaytaytt yytnttyytn aaymgntayy tngargtngg nccnccngtn    2700

tayttygaya cnacnwsngg ntayaaytty wsnacngarg cnggnatgaa ygcnathtgy    2760

wsnwsngcng gntgygarws nttywsnytn acncaraara thcartaygc nwsngartty    2820

ccnaaycarw sntaygtngc nathgcngcn wsnwsntggg tngaygaytt yathgaytgg    2880

ytnacnccnw snwsnwsntg ytgymgnath tayacnmgng gnccncayaa rgaygartty    2940

tgyccnwsna cngayacnws nttyaaytgy ytnaaraayt gyatgaaymg nacnytnggn    3000

ccngtnmgnc cnacnacnga rcarttycay aartayytnc cntggttyyt naaygayacn    3060

ccnaayathm gntgyccnaa rggnggnytn gcngcntaym gnacnwsngt naayytnwsn    3120

wsngayggnc arathathgc nwsncartty atggcntayc ayaarccnyt nmgnaaywsn    3180

cargayttya cngargcnyt nmgngcnwsn mgnytnytng cngcnaayat hacngcngar    3240

ytnmgnaarg tnccnggnac ngayccnaay ttygargtnt tyccntayac nathwsnaay    3300

gtnttytayc arcartayyt nacngtnytn ccngarggna thttyacnyt ngcnytntgy    3360

ttygtnccna cnttygtngt ntgytayytn ytnytnggny tngayathmg nwsnggnath    3420

ytnaayytny tnwsnathat hatgathytn gtngayacna thggnytnat ggcngtntgg    3480

ggnathwsnt ayaaygcngt nwsnytnath aayytngtna cngcngtngg natgwsngtn    3540
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47

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garttygtnw sncayathac nmgnwsntty gcngtnwsna cnaarccnac nmgnytngar      3600

mgngcnaarg aygcnacnat httyatgggn wsngcngtnt tygcnggngt ngcnatgacn      3660

aayttyccng gnathytnat hytnggntty gcncargcnc arytnathca rathttytty     3720

ttymgnytna ayytnytnat hacnytnytn ggnytnytnc ayggnytngt nttyytnccn     3780

gtngtnytnw sntayytngg nccngaygtn aaycargcny tngtnytnga rgaraarytn     3840

gcnacngarg cngcnatggt nwsngarccn wsntgyccnc artayccntt yccngcngay     3900

gcnaayacnw sngaytaygt naaytayggn ttyaayccng arttyathcc ngarathaay     3960

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<212>   DNA

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<213>   Artificial Sequence
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<223> primer

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cttctctgcg ctgcctcgat ggaa   24

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<400> 29
agtaaaaagg gctcgcagga t   21

<210> 30

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agtccttagg tagtggctta gtccctggaa gctc   34

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<212> DNA

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gtaatacgac tcactatagg gccctgacgg tccttcctga gggaatcttc ac   52

<210> 36

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gtaatacgac tcactatagg gcctgggaag ttggtcatgg ccactccagc   50

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Asp Tyr Lys Asp Asp Asp Asp Lys
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<213> Artificial Sequence

<220>

<223> motif

<400> 38

Tyr Gln Arg Leu
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<210> 39

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> antigen

<400> 39

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Glu Gln Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Pro Pro Asn
1               5                   10              15

Ile Arg Cys
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<210> 40

<211> 16

<212> PRT

<213> Artificial Sequence

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<223> antigen

<400> 40

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Glu Ala Phe Tyr Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys
1               5                   10              15
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<210> 41

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> antigen

<400> 41

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Gly Gln Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys
1               5                   10              15
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<210> 42

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

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Cys Ala Asn Ala Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu
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Ser

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<211>   5092

<212>   DNA

<213>   Homo sapiens

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<222>   (57)..(4136)

<223>

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                                                               1

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Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu Arg
              5   10   15

ttg gcc cag agt gag cct tac aca acc atc cac cag cct ggc tac tgc   155
Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr Cys
          20   25   30

gcc ttc tat gac gaa tgt ggg aag aac cca gag ctg tct gga agc ctc   203
Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser Leu
      35   40   45

atg aca ctc tcc aac gtg tcc tgc ctg tcc aac acg ccg gcc cgc aag   251
Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg Lys
50   55   60   65

atc aca ggt gat cac ctg atc cta tta cag aag atc tgc ccc cgc ctc   299
Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg Leu
              70   75   80

tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg gta   347
Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu Val
              85   90   95

tca ctg gaa gcg agt ctg tcg atc acc aag gcc ctc ctc acc cgc tgc   395
Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg Cys
          100   105   110

57

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cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg tgc          443
Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr Cys
    115                 120                 125

agc ccc aat cag agc ctc ttc atc aat gtg acc cgc gtg gcc cag cta          491
Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln Leu
130                 135                 140                 145

ggg gct gga caa ctc cca gct gtg gtg gcc tat gag gcc ttc tac cag          539
Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr Gln
                150                 155                 160

cat agc ttt gcc gag cag agc tat gac tcc tgc agc cgt gtg cgc gtc          587
His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg Val
            165                 170                 175

cct gca gct gcc acg ctg gct gtg ggc acc atg tgt ggc gtg tat ggc          635
Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr Gly
            180                 185                 190

tct gcc ctt tgc aat gcc cag cgc tgg ctc aac ttc cag gga gac aca          683
Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp Thr
        195                 200                 205

ggc aat ggt ctg gcc cca ctg gac atc acc ttc cac ctc ttg gag cct          731
Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu Pro
210                 215                 220                 225

ggc cag gcc gtg ggg agt ggg att cag cct ctg aat gag ggg gtt gca          779
Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val Ala
                230                 235                 240

cgt tgc aat gag tcc caa ggt gac gac gtg gcg acc tgc tcc tgc caa          827
Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys Gln
            245                 250                 255

gac tgt gct gca tcc tgt cct gcc ata gcc cgc ccc cag gcc ctc gac          875
Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu Asp
        260                 265                 270

tcc acc ttc tac ctg ggc cag atg ccg ggc agt ctg gtc ctc atc atc          923
Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile Ile
    275                 280                 285

atc ctc tgc tct gtc ttc gct gtg gtc acc atc ctg ctt gtg gga ttc          971
Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly Phe
290                 295                 300                 305

cgt gtg gcc ccc gcc agg gac aaa agc aag atg gtg gac ccc aag aag         1019
Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys Lys
                310                 315                 320

ggc acc agc ctc tct gac aag ctc agc ttc tcc acc cac acc ctc ctt         1067
Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu Leu
            325                 330                 335

ggc cag ttc ttc cag ggc tgg ggc acg tgg gtg gct tcg tgg cct ctg         1115
Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro Leu
            340                 345                 350
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58

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acc atc ttg gtg cta tct gtc atc ccg gtg gtg gcc ttg gca gcg ggc          1163
Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala Gly
    355                 360                 365

ctg gtc ttt aca gaa ctc act acg gac ccc gtg gag ctg tgg tcg gcc          1211
Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser Ala
370                 375                 380                 385

ccc aac agc caa gcc cgg agt gag aaa gct ttc cat gac cag cat ttc          1259
Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His Phe
                390                 395                 400

ggc ccc ttc ttc cga acc aac cag gtg atc ctg acg gct cct aac cgg          1307
Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn Arg
            405                 410                 415

tcc agc tac agg tat gac tct ctg ctg ctg ggg ccc aag aac ttc agc          1355
Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe Ser
            420                 425                 430

gga atc ctg gac ctg gac ttg ctg ctg gag ctg cta gag ctg cag gag          1403
Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln Glu
    435                 440                 445

agg ctg cgg cac ctc cag gta tgg tcg ccc gaa gca cag cgc aac atc          1451
Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn Ile
450                 455                 460                 465

tcc ctg cag gac atc tgc tac gcc ccc ctc aat ccg gac aat acc agt          1499
Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr Ser
                470                 475                 480

ctc tac gac tgc tgc atc aac agc ctc ctg cag tat ttc cag aac aac          1547
Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn Asn
            485                 490                 495

cgc acg ctc ctg ctg ctc aca gcc aac cag aca ctg atg ggg cag acc          1595
Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln Thr
            500                 505                 510

tcc caa gtc gac tgg aag gac cat ttt ctg tac tgt gcc aat gcc ccg          1643
Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala Pro
    515                 520                 525

ctc acc ttc aag gat ggc aca gcc ctg gcc ctg agc tgc atg gct gac          1691
Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala Asp
530                 535                 540                 545

tac ggg gcc cct gtc ttc ccc ttc ctt gcc att ggg ggg tac aaa gga          1739
Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys Gly
                550                 555                 560

aag gac tat tct gag gca gag gcc ctg atc atg acg ttc tcc ctc aac          1787
Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu Asn
            565                 570                 575

aat tac cct gcc ggg gac ccc cgt ctg gcc cag gcc aag ctg tgg gag          1835
Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp Glu
            580                 585                 590

gag gcc ttc tta gag gaa atg cga gcc ttc cag cgt cgg atg gct ggc          1883
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59

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Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala Gly
    595             600             605

atg ttc cag gtc acg ttc atg gct gag cgc tct ctg gaa gac gag atc    1931
Met Phe Gln Val Thr Phe Met Ala Glu Arg Ser Leu Glu Asp Glu Ile
610             615             620             625

aat cgc acc aca gct gaa gac ctg ccc atc ttt gcc acc agc tac att    1979
Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr Ile
            630             635             640

gtc ata ttc ctg tac atc tct ctg gcc ctg ggc agc tat tcc agc tgg    2027
Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser Trp
            645             650             655

agc cga gtg atg gtg gac tcc aag gcc acg ctg ggc ctc ggc ggg gtg    2075
Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly Val
            660             665             670

gcc gtg gtc ctg gga gca gtc atg gct gcc atg ggc ttc ttc tcc tac    2123
Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser Tyr
            675             680             685

ttg ggt atc cgc tcc tcc ctg gtc atc ctg caa gtg gtt cct ttc ctg    2171
Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe Leu
690             695             700             705

gtg ctg tcc gtg ggg gct gat aac atc ttc atc ttt gtt ctc gag tac    2219
Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu Tyr
            710             715             720

cag agg ctg ccc cgg agg cct ggg gag cca cga gag gtc cac att ggg    2267
Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile Gly
            725             730             735

cga gcc cta ggc agg gtg gct ccc agc atg ctg ttg tgc agc ctc tct    2315
Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu Ser
            740             745             750

gag gcc atc tgc ttc ttc cta ggg gcc ctg acc ccc atg cca gct gtg    2363
Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala Val
            755             760             765

cgg acc ttt gcc ctg acc tct ggc ctt gca gtg atc ctt gac ttc ctc    2411
Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe Leu
770             775             780             785

ctg cag atg tca gcc ttt gtg gcc ctg ctc tcc ctg gac agc aag agg    2459
Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys Arg
            790             795             800

cag gag gcc tcc cgg ttg gac gtc tgc tgc tgt gtc aag ccc cag gag    2507
Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln Glu
            805             810             815

ctg ccc ccg cct ggc cag gga gag ggg ctc ctg ctt ggc ttc ttc caa    2555
Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe Gln
            820             825             830

aag gct tat gcc ccc ttc ctg ctg cac tgg atc act cga ggt gtt gtg    2603
Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val Val
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60

ctg ctg ctg ttt ctc gcc ctg ttc gga gtg agc ctc tac tcc atg tgc   2651
Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met Cys
850   855   860   865

cac atc agc gtg gga ctg gac cag gag ctg gcc ctg ccc aag gac tcg   2699
His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp Ser
            870   875   880

tac ctg ctt gac tat ttc ctc ttt ctg aac cgc tac ttc gag gtg ggg   2747
Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val Gly
            885   890   895

gcc ccg gtg tac ttt gtt acc acc ttg ggc tac aac ttc tcc agc gag   2795
Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser Glu
        900   905   910

gct ggg atg aat gcc atc tgc tcc agt gca ggc tgc aac aac ttc tcc   2843
Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe Ser
        915   920   925

ttc acc cag aag atc cag tat gcc aca gag ttc cct gag cag tct tac   2891
Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser Tyr
930   935   940   945

ctg gcc atc cct gcc tcc tcc tgg gtg gat gac ttc att gac tgg ctg   2939
Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp Leu
            950   955   960

acc ccg tcc tcc tgc tgc cgc ctt tat ata tct ggc ccc aat aag gac   2987
Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys Asp
            965   970   975

aag ttc tgc ccc tcg acc gtc aac tct ctg aac tgc cta aag aac tgc   3035
Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn Cys
        980   985   990

atg agc atc acg atg ggc tct gtg agg ccc tcg gtg gag cag ttc cat   3083
Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe His
        995   1000   1005

aag tat ctt ccc tgg ttc ctg aac gac cgg ccc aac atc aaa tgt   3128
Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys Cys
1010   1015   1020

ccc aaa ggc ggc ctg gca gca tac agc acc tct gtg aac ttg act   3173
Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu Thr
1025   1030   1035

tca gat ggc cag gtt tta gac aca gtt gcc att ctg tca ccc agg   3218
Ser Asp Gly Gln Val Leu Asp Thr Val Ala Ile Leu Ser Pro Arg
1040   1045   1050

ctg gag tac agt ggc aca atc tcg gct cac tgc aac ctc tac ctc   3263
Leu Glu Tyr Ser Gly Thr Ile Ser Ala His Cys Asn Leu Tyr Leu
1055   1060   1065

ctg gat tca gcc tcc agg ttc atg gcc tat cac aag ccc ctg aaa   3308
Leu Asp Ser Ala Ser Arg Phe Met Ala Tyr His Lys Pro Leu Lys
1070   1075   1080

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aac  tca  cag  gat  tac  aca  gaa  gct  ctg  cgg  gca  gct  cga  gag  ctg     3353
Asn  Ser  Gln  Asp  Tyr  Thr  Glu  Ala  Leu  Arg  Ala  Ala  Arg  Glu  Leu
1085                 1090                 1095

gca  gcc  aac  atc  act  gct  gac  ctg  cgg  aaa  gtg  cct  gga  aca  gac     3398
Ala  Ala  Asn  Ile  Thr  Ala  Asp  Leu  Arg  Lys  Val  Pro  Gly  Thr  Asp
1100                 1105                 1110

ccg  gct  ttt  gag  gtc  ttc  ccc  tac  acg  atc  acc  aat  gtg  ttt  tat     3443
Pro  Ala  Phe  Glu  Val  Phe  Pro  Tyr  Thr  Ile  Thr  Asn  Val  Phe  Tyr
1115                 1120                 1125

gag  cag  tac  ctg  acc  atc  ctc  cct  gag  ggg  ctc  ttc  atg  ctc  agc     3488
Glu  Gln  Tyr  Leu  Thr  Ile  Leu  Pro  Glu  Gly  Leu  Phe  Met  Leu  Ser
1130                 1135                 1140

ctc  tgc  ctt  gtg  ccc  acc  ttc  gct  gtc  tcc  tgc  ctc  ctg  ctg  ggc     3533
Leu  Cys  Leu  Val  Pro  Thr  Phe  Ala  Val  Ser  Cys  Leu  Leu  Leu  Gly
1145                 1150                 1155

ctg  gac  ctg  cgc  tcc  ggc  ctc  ctc  aac  ctg  ctc  tcc  att  gtc  atg     3578
Leu  Asp  Leu  Arg  Ser  Gly  Leu  Leu  Asn  Leu  Leu  Ser  Ile  Val  Met
1160                 1165                 1170

atc  ctc  gtg  gac  act  gtc  ggc  ttc  atg  gcc  ctg  tgg  ggc  atc  agt     3623
Ile  Leu  Val  Asp  Thr  Val  Gly  Phe  Met  Ala  Leu  Trp  Gly  Ile  Ser
1175                 1180                 1185

tac  aat  gct  gtg  tcc  ctc  atc  aac  ctg  gtc  tcg  gcg  gtg  ggc  atg     3668
Tyr  Asn  Ala  Val  Ser  Leu  Ile  Asn  Leu  Val  Ser  Ala  Val  Gly  Met
1190                 1195                 1200

tct  gtg  gag  ttt  gtg  tcc  cac  att  acc  cgc  tcc  ttt  gcc  atc  agc     3713
Ser  Val  Glu  Phe  Val  Ser  His  Ile  Thr  Arg  Ser  Phe  Ala  Ile  Ser
1205                 1210                 1215

acc  aag  ccc  acc  tgg  ctg  gag  agg  gcc  aaa  gag  gcc  acc  atc  tct     3758
Thr  Lys  Pro  Thr  Trp  Leu  Glu  Arg  Ala  Lys  Glu  Ala  Thr  Ile  Ser
1220                 1225                 1230

atg  gga  agt  gcg  gtg  ttt  gca  ggt  gtg  gcc  atg  acc  aac  ctg  cct     3803
Met  Gly  Ser  Ala  Val  Phe  Ala  Gly  Val  Ala  Met  Thr  Asn  Leu  Pro
1235                 1240                 1245

ggc  atc  ctt  gtc  ctg  ggc  ctc  gcc  aag  gcc  cag  ctc  att  cag  atc     3848
Gly  Ile  Leu  Val  Leu  Gly  Leu  Ala  Lys  Ala  Gln  Leu  Ile  Gln  Ile
1250                 1255                 1260

ttc  ttc  ttc  cgc  ctc  aac  ctc  ctg  atc  act  ctg  ctg  ggc  ctg  ctg     3893
Phe  Phe  Phe  Arg  Leu  Asn  Leu  Leu  Ile  Thr  Leu  Leu  Gly  Leu  Leu
1265                 1270                 1275

cat  ggc  ttg  gtc  ttc  ctg  ccc  gtc  atc  ctc  agc  tac  gtg  ggg  cct     3938
His  Gly  Leu  Val  Phe  Leu  Pro  Val  Ile  Leu  Ser  Tyr  Val  Gly  Pro
1280                 1285                 1290

gac  gtt  aac  ccg  gct  ctg  gca  ctg  gag  cag  aag  cgg  gct  gag  gag     3983
Asp  Val  Asn  Pro  Ala  Leu  Ala  Leu  Glu  Gln  Lys  Arg  Ala  Glu  Glu
1295                 1300                 1305
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62

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gcg gtg gca gca gtc atg  gtg gcc tct tgc cca  aat cac ccc tcc     4028
Ala Val Ala Ala Val Met  Val Ala Ser Cys Pro  Asn His Pro Ser
1310             1315              1320

cga gtc tcc aca gct gac  aac atc tat gtc aac  cac agc ttt gaa     4073
Arg Val Ser Thr Ala Asp  Asn Ile Tyr Val Asn  His Ser Phe Glu
1325             1330              1335

ggt tct atc aaa ggt gct  ggt gcc atc agc aac  ttc ttg ccc aac     4118
Gly Ser Ile Lys Gly Ala  Gly Ala Ile Ser Asn  Phe Leu Pro Asn
1340             1345              1350

aat  ggg cgg cag ttc tga tacagccaga ggccctgtct aggctctatg        4166
Asn  Gly Arg Gln Phe
1355
```

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gccctgaacc aaagggttat ggggatcttc cttgtgactg ccccttgaca cacgccctcc     4226

tcaaatccta ggggaggcca ttcccatgag actgcctgtc actggaggat ggcctgctct     4286

tgaggtatcc aggcagcacc actgatggct cctctgctcc catagtgggt ccccagtttc     4346

caagtcacct aggccttggg cagtgcctcc tcctgggcct gggtctggaa gttggcagga     4406

acagacacac tccatgtttg tcccacactc actcactttc ctaggagccc acttctcatc     4466

caacttttcc cttctcagtt cctctctcga aagtcttaat tctgtgtcag taagtcttta     4526

acacgtagca gtgtccctga gaacacagac aatgaccact accctgggtg tgatatcaca     4586

ggaggccaga gagaggcaaa ggctcaggcc aagagccaac gctgtgggag gccggtcggc     4646

agccactccc tccagggcgc acctgcaggt ctgccatcca cggccttttc tggcaagaga     4706

agggcccagg aaggatgctc tcataaggcc caggaaggat gctctcataa gcaccttggt     4766

catggattag cccctcctgg aaaatggtgt tgggtttggt ctccagctcc aatacttatt     4826

aaggctgttg ctgccagtca aggccaccca ggagtctgaa ggctgggagc tcttggggct     4886

gggctggtcc tcccatcttc acctcgggcc tggatcccag gcctcaaacc agcccaaccc     4946

gagcttttgg acagctctcc agaagcatga actgcagtgg agatgaagat cctggctctg     5006

tgctgtgcac ataggtgttt aataaacatt tgttggcaga aaaaaaaaaa aaaaaaaaaa     5066

aaaaaaaaaa aaaaaaaaaa aaaaaa                                         5092
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<210> 44

<211> 1359

<212> PRT

<213> Homo sapiens

<400> 44

63

```
Met Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu
1            5                10                15

Arg Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr
            20                25                30

Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser
        35                40                45

Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg
    50                55                60

Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg
65                70                75                80

Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu
            85                90                95

Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
            100               105               110

Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr
        115               120               125

Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln
    130               135               140

Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
145               150               155               160

Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg
            165               170               175

Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr
        180               185               190

Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
        195               200               205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
    210               215               220

Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val
225               230               235               240

Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys
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245   250   255

Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu
            260   265   270

Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile
            275   280   285

Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly
    290   295   300

Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys
305   310   315   320

Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu
            325   330   335

Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro
            340   345   350

Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala
            355   360   365

Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
    370   375   380

Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His
385   390   395   400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn
            405   410   415

Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
            420   425   430

Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln
            435   440   445

Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn
    450   455   460

Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr
465   470   475   480

Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn
            485   490   495

                                    65

```
Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln
            500             505             510

Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
            515             520             525

Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala
    530             535             540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys
545             550             555             560

Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu
            565             570             575

Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp
            580             585             590

Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala
            595             600             605

Gly Met Phe Gln Val Thr Phe Met Ala Glu Arg Ser Leu Glu Asp Glu
    610             615             620

Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr
625             630             635             640

Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser
            645             650             655

Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
            660             665             670

Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser
            675             680             685

Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe
    690             695             700

Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
705             710             715             720

Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile
            725             730             735
```

66

Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu
        740   745   750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
        755   760   765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe
    770   775   780

Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785   790   795   800

Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln
            805   810   815

Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe
        820   825   830

Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val
        835   840   845

Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met
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Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
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Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val
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Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser
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Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe
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Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser
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Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
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Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys
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Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn
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Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe
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His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys
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Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu
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Thr Ser Asp Gly Gln Val Leu Asp Thr Val Ala Ile Leu Ser Pro
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Arg Leu Glu Tyr Ser Gly Thr Ile Ser Ala His Cys Asn Leu Tyr
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Leu Leu Asp Ser Ala Ser Arg Phe Met Ala Tyr His Lys Pro Leu
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Tyr Glu Gln Tyr Leu Thr Ile Leu Pro Glu Gly Leu Phe Met Leu
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Ser Leu Cys Leu Val Pro Thr Phe Ala Val Ser Cys Leu Leu Leu
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Gly Leu Asp Leu Arg Ser Gly Leu Leu Asn Leu Leu Ser Ile Val
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Met Ile Leu Val Asp Thr Val Gly Phe Met Ala Leu Trp Gly Ile
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Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val Ser Ala Val Gly
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Ser Thr Lys Pro Thr Trp Leu Glu Arg Ala Lys Glu Ala Thr Ile
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Ser Met Gly Ser Ala Val Phe Ala Gly Val Ala Met Thr Asn Leu
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Leu His Gly Leu Val Phe Leu Pro Val Ile Leu Ser Tyr Val Gly
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Pro Asp Val Asn Pro Ala Leu Ala Leu Glu Gln Lys Arg Ala Glu
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